

Only 75p

commodore

HORIZONS

September 1984

EXPLORE MICRONET
AND COMPUNET

JOYSTICKS
REVIEW



INTRODUCING
DISK DRIVES

WIN £250
or QS
software



AMERICAN

Big, Bold and Beautiful...

ASTROCHASE

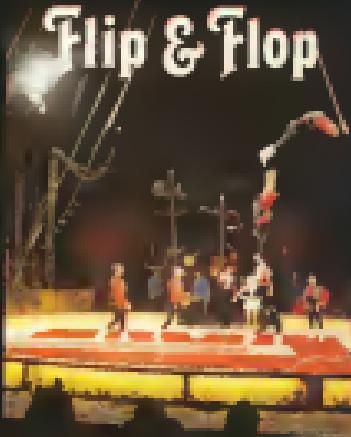


294 *Scopus*

100 Companies and Charitable Activities
 ... Most Innovative Businesses, 2002
 - National Business Challenge, 2002
Management Survey of the Month
 The Glass Tax, Manufacturing Management,
 2002
Software Project Portfolio Survey of the
 Year, 2002
Software Business Report Card, 2002



Flip & Flop



commodore
64



第 5 章



See that you do not stop the
dangerous and vicious elements in
this country from the other states
so who think themselves better than others.
Great consideration, Mr. President, is
to be given to this point. Fully
the best and fairest. It will give great
and instant relief. —— Consideration
most prudently.

Cassette \$8.95
Disk \$10.95



1



Open access communication with [Open Access Week 2020](#)

STATE SOFT LIMITED,
BUSINESS AND TECHNOLOGY CENTRE,
BESSEMER DRIVE,
STEVENAGE, HERTS. TEL. 0438 316561



Computer HORIZONS

Information for the computer professional

Editor
Brendon Gore

Assistant Editor
Christopher Portman

Editorial Secretary
Carmelita Syphax

Group Advertising Manager
David Lake

Advertisement Manager
Janice Kee

Administration
Theresa Lucy

Managing Editor
Dianne Siedl

Publishing Director
Harry Falstad

Telephone Processor
(Call 201-463-0433)
614-463-4633

UK address:

Commissioner Abingdon 12-15 Urdu
Newport Street, London WC2R 3ED

US address:

Commissioner Abingdon c/o Business
Press International, 200 First Choi
Street, New York, NY 10017

Subscriptions

US \$10.00 for 12 issues, overseas
surface postpaid US and Canada
\$14.00 for 12 issues, US and Canada air
mailed US\$20.00 for 12 issues.

Submitting articles

Commissioner Abingdon welcomes readers' **real** criticisms — either articles or **program listings**. Articles should be typed double-spaced with a wide margin. Programs should, whenever possible, be printed out on plain white paper, accompanied by a cassette. We cannot guarantee to return every article or program submitted; so please keep a copy. If you want to know your program returned you must include a stamped, addressed envelope.



SUMSHINE

Computer Abingdon is published monthly
by Business Books International, 200 First Choi Street,
NY 10017, USA. ISSN 0263-2342. Challenge Systems
is a registered trademark of Business Books International.
Business Books International is a member of the
Tandy Corporation, Dallas, Texas, USA. John M. Tandy, President
(214) 661-1100. John M. Tandy, Chairman of the Board
and President of the First Choi Office is a managing
editor of Computer Abingdon.

CONTENTS

LETTERS

3

Barbork looks for software designed for the handicapped, some useful programs, new tips, and the latest contributions to the chart debate.

News

4

Tramiel's plan for Asia, a special report from Commander's own Carly Simon, and a new feature — a roundup of the latest software releases.

The disk compendium

13

A beginner's guide to using the 1541 disk drive, based on the book by David Lawrence and Mark Rydholm. Newswatch staff news.

Modems and networks

18

Roger Williams takes a detailed look at the two most popular networks, Novell and Comshare — what can they do for you?

Profile

22

Chris Johnson takes what may be his final trip to Commander's Rough EDL, and gets the last stats about Vantech from James Richardson.

Journal jive

25

The image shows a man in a suit sitting at a desk, working on a vintage computer terminal with a keyboard and a small screen. He is looking down at the machine. The desk has papers and other office equipment on it.

Tag along! David Fox works out with the latest selection of fitness items — what you'll need in the best shape, where to get them, and which gets them down in shape!

EDITORIAL

DAVE TRAMIEL IS NOT UNKNOWN TO USERS OF PCWARE. He is a courageous character who built up Commander from nothing to a multi-million pound company. Commander was very much his personal fief.

Then it was a considerable surprise when Tramiel announced his resignation as Commander's president and chief executive in January this year. At the time he claimed that he was resigning for "personal reasons" and that there was no animosity between him and the remaining members of the Commander board. However, subsequent reports suggest that there was an acrimonious split between Tramiel and Commander chairman Iraay Goldstein.

But, following his purchase of Asm for £240m, Tramiel is back. And the committee meeting he right now is undoubtedly Commander.

Whether Tramiel can repeat his extraordinary success with Asm remains to be seen, but he has certainly given Commander something to think about. Asm has been £200m in 1985, but two years ago it was the hottest property on the microcomputer scene and worth more than £150m. Well manufacturing plants in the US, Hong Kong, Italy and Taiwan, Asm is one of the few companies which could match Commander's volume of production.

Tramiel has already given notice that he intends to move fast by laying off several hundred of Asm's California workforces. Some industry observers now expect Asm to drop the price of its 80386 series, putting it in direct competition with the Commander 486.

Comshare has also moved by taking out an injunction against four of its employees who have joined Tramiel at Asm. The injunction prevents the four engineers from "using or disclosing or any manner whatsoever any trade secret or proprietary or confidential information belonging to Comshare".

The stage is now set for a head-on clash between the two companies — and to be visto will go the spoils.

New Game

29

Mobile Sys programmer Richard Clark provides this month's Vic 20 spectrum, Mission X. Will you survive the space op?

Comshare news

34



Paul Gervais takes on the benefits of hill and leaves the steeper ski-slopes.

Enter industry for the id

38

It's only 18, but it could make all the difference. David Nichols shows you how.

Software file

43

Now over 100 and still growing, plus missing links from August's "Milestone".

Impact

48

The first of a new series of book reviews on the Computerware series.

Software books comparison

49

The first of this month's two reviews — we've compiled an 80-page list of Software books.

Answer Back

53

Technical expert Jack Cohen takes on the latest batch of readers' problems.

Discount Disk

58

Another new feature — Supersoft software at discount prices.

Competitors

59

Twenty-four reviews will review CPM 6.0 games from Commodore software.

Lamasoft

ORIGINAL SOFTWARE DESIGN

46 MOUNT PLEASANT, TADLEY, HAMPS RG22 6BN



SEND S.A.E. FOR OFFICE NEWSLETTER "THE NATURE OF THE BRAIN"



Windows & Macintosh 386



Windows 3.1 Compatible



Macintosh



Amiga



PC Compatible

Call toll-free 1-800-221-1234, Ext. 2200, or fax 011-44-1252-821000, or write to Lamasoft, 46 Mount Pleasant, Tadley, Hampshire RG22 6BN, England. U.S.A. offices: 1000 University Avenue, Suite 100, Berkeley, CA 94710. Canadian offices: 1000 University Avenue, Suite 100, Vancouver, BC V6Z 1G5, Canada.

K-Tel change

THE FROZEN RANGER label will be launched in September with two games, one of which, *Warren Wimmer*, is a graphic adventure for the MSX. Prices are not yet available.

There are three MSX games available from K-Tel, either as tape or disk. Titles include City Attack and Clippy.

From Hammer spokesman Kevin Walker said: "We're setting up the new label to indicate that the software disc was no longer independent to the rest of K-Tel, and we'll be making separate distribution deals. There will be several Frozen Ranger games for the MSX, but it's too early to give details."

Leeds CBM Show off

THE SECOND HALF of the 8th International Commodore Computer Show, planned to be held in Leeds from 27th - 29th of September, has been cancelled.

Granada micros

HIGH STREET: The usual year Granada has announced plans to sell home computers.

Following talks through past years, Granada has decided to market the Commodore 64 and Vic 20, as well as the Sinclair Spectrum and the Electron and BBC. It continues.

A wide range of computer games, educational software and peripherals will also be sold in over 800 Granada stores. Spokesman John Harper said that apart from the basic machines, Granada was also looking at peripherals such as printers and disk drives, and planning to import a range of the most popular software.

Tramiel buys Atari Corp.

THE MICROCOMPUTER industry has been rocked by the news that former Commodore head Jack Tramiel has bought out old rivals Atari.

Atari, a subsidiary of the giant Warner corporation, has been losing money for some time due to the success of microcomputers over dedicated games playing machines.

Now Tramiel, who left Commodore after its acquisition with chairman Irving Gould, allegedly over the bringing of Tramiel's ideas into the business, has paid \$200m for most of Atari's hardware assets, a complicated deal involving shares and stock options.

The 1984 acquisition was aimed at any parts following the success of the personal share. However, following poor results at the Los Angeles show in June, plans have been changed.

Commodore claims that the reason for the cancellation is the complication caused by the strike in Europe. A statement from Commodore's PR office said that "rather than staging the Leeds show without a full complement of staff and resources, we have decided to postpone it for the time being another factor is that we will shortly be launching our production of the new Commodore 64 home computer which will be in large production by full strength."

Further details of the Leeds show will be given later in the year, but in view of the change, planning carried on London is seen as less certain whether the show will take place at all. The current Earl's Court and Mayfair Trade shows also drew power crowds, with many predicting that the major manufacturers will have to find something new for the public to see if the pressure is to be increased before Christmas.

news has been made by Tramiel's new company.

Atari's chairman James Moore was first aware of the news of the takeover by



James
Moore
chairman
of Atari

Tramiel Technology Incorporated CEO Al Alcorn's plan, for a new home computer, an enhanced machine, and work with George "Star Wars"

losses, are now in doubt. Many of the workforce and about all of the senior executives are expected to leave.

Now, although Jack Tramiel will make no comment on his plans for Atari, it seems plain that for months to fight Commodore, the company he ran up, as hard as possible. Already the fighting has started, as Commodore has started drafting employees of taking secret material on the planned Commodore 64000 machine to Tramiel.

Tramiel seems determined to live up to his motto — "I'm not in business to be loved — I'm in business to make money."

Suitable case from Jenart

JENART DESIGN has solved the problem of transporting your Vic or 64 — whether in the computer club, the music studio or back in the shop — in style.

The Jenart Carrying and Transport case is made in marine grade marine and strengthened ABS plastic, reinforced with foam and corrugated with high-strength glass and metal corners. The computer fits easily into one pocket, laid on top of the padded lid. The diskette and power supply can be stored in another pocket, and there's space enough left for tapes and cards.

The case, which includes latching straps and a carrying handle, costs £19.25 + £2.25 p/p. It comes with a Commodore 64 or Vic 20 logo.

Jenart also manufactures a range of cases, including a Commodore model at £1.20 + 25p p/p along with cases and covers for all the popular machines.

Contact Jenart at 18 Rose Lake, Bedwyn, Weymouth, Dorset DT2 8LY, UK. Tel: 0202 48971, or Bedwyn, Weymouth DT2 8LY.

Now all we need is a case for the disk drive.



£19.25 + £2.25 p/p



Chris Jenkins visits Commodore UK's new Corby HQ and talks to production manager David Briggs

A NEW HQ for Commodore UK will open at the beginning of August, when the new Corby manufacturing facility comes into full production.

Commodore's British headquarters have long been too small for the rapidly expanding company, and with the help of government development grants the new Corby plant has been set up to allow for further growth.

At the same time Commodore UK will go into production of the Vic 20 and 64, and later the Plus4 and C64. Commodore's stores have previously been concentrated in Bracknell, West Germany.

Interviewed at the Corby



David Briggs — young and

fit, production manager David Briggs said that the move was long awaited by the team. "The satellite factory was completed in May, and has been in production since July. The service department is also fully operational."

All departments, including sales and marketing, will be located in the same new factory once that building is completed. Only external work now remains to be done.

Corby, situated near Kettering, has been an employment blackspot since the closure of the British Steel works some years ago. Now Commodore, and other electronics companies such as PC Components, is bringing life back to the area. 150 people have been employed in the assembly line already, and the full complement should number 200.

Despite some initial apprehension about the move, David Briggs claims that some British employees see the advantages of Corby. "Shipping prices are cheaper and you're only 100 miles down from the constituency."

For Commodore's management, the advantages of having manufacturing and service facilities in one site are obvious. "We've knocked

together a 20,000 and a 30,000 square foot warehouse to set up the assembly line. The cases, keyboards and PCBs come in assembled, and we look in the outside for four hours, assemble the units and test the keyboards. Then test the whole unit again before passing it to packing and dispatch. We also have savings quality inspectors on the assembly line."

Production of the 64 is already at 2,000 per day.

However, there is no yet no production of the Vic, Plus4 or C64, and David Briggs disclosed by comment on whether the new machines would be ready in large quantities by Christmas.

Day-to-day work will involve reworking, although some will be produced at Corby. There are no plans for the production of cartridges, or for peripherals which will continue to be made overseas.



Corby workforce packed and fit for purpose

The 64 Software Centre

1, Princeton Street, London WC1. Tel 01-430 0954

The specialist centre with the widest range of software for the Commodore 64 and the best service. Open Monday-Friday (and Saturday) Demonstration facilities.

● BUSINESS SOFTWARE:

Accounts, Stock Control, Database Systems, Spreadsheets, Statistics Charts, Budget, Word Processors.

● HOUSEHOLD ACCOUNTS:

Banking, Budgeting, Word Processors, Databases.

● UTILITIES & AIDS:

Simon's Basic, BC Basic, Turtle Graphics, Ultrabasic, Pal, Mikro Assembler, Hesmon 64, Victron, Master 64, The Tool, Graphics Designer, Sprite Aid, Turbo Ext. Basic, Acces +, Zoom Pascal, Firth 64, Logo, 64 Doctor, Ultisynth, Synthy 64, Scope.

● EDUCATIONAL:

Maths, Biology, Chemistry, Physics, History, Geography, French, Italian, Spelling.

● SIMULATIONS:

War, Flying, Golf, Boxing, Stock Exchange, Commodities.

● GAMES & ADVENTURES:

English and American (Cassette, Disk, Cartridges).

● COMPUTER COURSES:

Dr Watson's Basic and Assembler for Beginners, CBM 64 Tutor.

Friendly assistance and advice given. Export orders welcome. Immediate despatch for mail and telephone orders (Access, Visa, Eurocard, Mastercard). Discounts for package deals.

Video giants hit 64

TWO GIANT video game corporations are set to enter the 64 software market.

Fischer's plan include Star Wars, based on the George Lucas film, Gyruss, a complex space attack game, plus 64x, Castle, a "tinkers" game and

services of the arcade favourites Pac-Man and Q*Bert. All the games will be available on disk only at September. European product manager Ray Foster can assure "Already we are seeing a marked increase in the disk sales percentage of mid-range home computer users." The last news — the games will cost around £24.95.

Activision's plans focus with Puffin 2, a follow-up to their popular videogame Puffin. Again the fare is

Puffin Harry, also taking advantage of memory more. This version costs £19.95, but the disk price has yet to be announced.

Already available are Beam Rider, Puffin and Decapolis. These are enhanced and enhanced versions of video game originals.

Upcoming titles include Zap!, ZZ-E.G., Toy Story and River Raid. All the Activision games should be available by late October.

Dataview value

DATAVIEW software specialists Dataview have released a high-quality word processor and compiler for the 64.

Spokesman Ed Newman explained "We're the 64 incarnation of a program developed for the 4000 series. On the 6000 it's called ZAP! — the 64 version, which retains most of the features, is only £29.95 on disk. Although it's a forty-column program, it has full screen scrolling, colour control and all the features you'd expect of a top-quality word processor."

The 64 Pack DWP (Computer version) is two sections — a tape costing £14.95, which allows up to 128 of object code to be compiled, and a £9.95 disk, which has no restrictions since the program can switch in and out of the disk. The disk version also has special routines for speech recognition.

For further details contact Dataview at Portmeirion House, East Bay, Colne, Lancs, phone 0282 662355.

Commodore staff on the move

WITH THE MOVE TO the new Comdex plant, Commodore will make a number of changes in management structures.

John Barker, marketing manager, is leaving in work with Andromeda Software Associates has a growing reputation as importers of Hungarian games software (see Commodore Horizons, May).

Although Commodore is "seriously looking" for a replacement, no appointment has been announced at the time of writing.

Gail Wellington software

product manager, will not be moving to Comdex UK marketing director Howard Stans-



Howard
Stans
of Comdex

which announced that Gail Wellington will be working as

the Shanghai software collaborator for Commodore Electronics, at a rate not yet decided. His job will be to check the stability of software, set up for the UK market and oversee distribution.

The Comdex move will mean redundancy for a number of senior clerical staff at Salford, but in Howard Stans' words "We'll be talking with us about all those who regard themselves with Commodore as a career rather than just a job."

SOFT*HITS*SOFT*HITS*SOFT*HITS

This month's round-up of software releases will be extended and next month has a whole new section of Commodore Horizons. From now on we'll be looking at more software and telling you more about it, so that readers will get the widest possible coverage of the rapidly expanding range of software for the 64 and Vic 20.



Hercules, 64, cassette, £6.95, Electronic Newcomer, new idea — it's a series of arcade adventures set in mythical Greece. Hercules, 64, VIC 20, cassette, £9.95, Electronic Games — 20 basic games on one tape. Maze, Space Invaders, easy simple adventure, quality comparable to most magazine listings. You can look into the programs to study programming techniques.

Robotron, 64, cassette, £9.95, English Software, Graphic adventure with 20 screens. As Special Agent Sol you have to find your missing spaceship and escape from a strange planet.

Maze, 64, cassette, £7.95, Mapped Mazing games get better and better — this one is a fast moving underground snake adventure with rollers and various weapons standing between you and the bugs of gold.

Star Thunder, 64, cassette, £6.95, Richard Wilson, First adaptation of the Space Invader. Plan your principles against a series of enemies to rescue your commander from the clutches of an invisible master. Hercules, 64, cassette £9.95, also VIC 20, Electronic. A puzzle — 120 challenges solved with mind figures instead of mere



frames. First moving "through the window" action as you pilot your starship across a planetary surface littered with mysterious obstacles. Basic controls 2000 role spacewarp sequence makes the game a must.

Bomber, 64, cassette, £3.95, Andromeda. Not a "tinkers" game in which you control a warplane collecting bases threatened by intelligent monsters!

Shooter, VIC + 64, cassette, £3.95, Mastermedia. Might be a puzzle from the range of the cheapo games, but it has been able to get past the VIC version yet! At this price, how can you say no?

Decapolis, 64, cassette, £3.95, Andromeda. Excellent implementation of the arcade classic Decapolis. Headquarters, leaders



missions, pools, swimmers, tanks and bombers. It's the sort of great sound effects, superb graphics and stimulate. Great for you parents and jet it.

Omega One, 64, £1.95, cassette, CTR. War games in which you must fight off enemy planes, tank turrets, anti-aircraft fire and missiles to reach your target. Covered from the Spectrum version — surprisingly, not as good as the original!

Next month's New Releases section will feature more games, more census data, and details of new utility and business packages too.

RICHARD SHEPHERD SOFTWARE

A HOME BUDGETING & BANKING SYSTEM THAT REALLY MAKES YOUR COMMODORE 64 WORK!

NOW ON CBM 64 DISK AND CASSETTE



A professional style multi function Cash Controller program. In disk format you can load, and make an entry... or update your existing records... in just seconds. This easy to use program can handle up to 400 transactions, giving instant statements of your bank balance. Now there's no excuses for going into 'the red' and paying unnecessary bank charges!

BANK ACCOUNT

- Statements on demand from any date to date
- Holds up to 400 transactions
- Standing order facility
- All transfers can be automatically coded to allocate up to 16 budget headings
- Search facility for any single item by description or amount

HOME BUDGETING

- 16 budget headings, e.g. Gas, Bills, Car Tax, you can choose the headings
- Highlights under/over spending
- Full budget expenditure breakdown
- Budget re-think facility

LOAN/MORTGAGE CALCULATOR

All you ever wanted to know but didn't like to ask! Calculates

- Interest rates
- Payback periods
- Capital sum
- Period of loan

- PRINTOUT FACILITY
- FULL SECURITY WITH PERSONAL PASSWORD
- SAVE DATA onto CASSETTE OR DISK

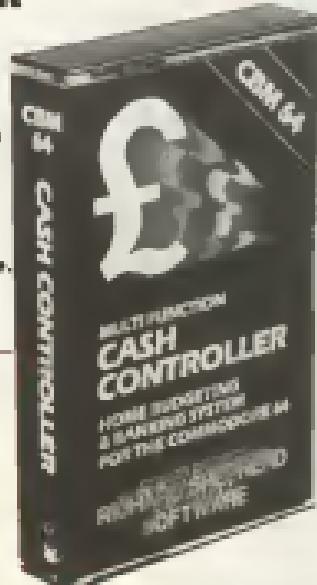
Available from good computer stores or direct by mail order at a price that won't upset the Bank Manager!

CASSETTE
£9.95
INC P & P

DISK*
£14.95

Compatible only with 1541 Data Drive

INC P & P
Dealer enquiries
welcome.
Generous discounts.



PRIORITY MAIL ORDER

Please send me COMM 64 CASH CONTROLLER
 COMM 64 DISK Please add
£6.00 for each item VAT included
including post & packing (overseas orders add £1.50)
Name
Address

I enclose my cheque and P.O. payable to Richard Shepherd Software

Or debit my Access/Visa Credit Card

For full details of our credit card service please call 06286 63531

Signature

Order ref:

Postage and packing £1.50 extra for overseas customers

Delivery time 2-3 weeks

Order ref:

24 Hour Credit Card Hotline (06286) 63531

STICKER TO STATE IF YOU
RECEIVE CASSETTE OR DISK

RICHARD SHEPHERD SOFTWARE

ELM HOUSE, 23-25 ELMSHOTT LANE, DIPPERHAM, SLough, BERKS. TEL. (06286) 63531

MICROPOWER MICROPOWER MICROPOWER
MICROPOWER MICROPOWER MICROPOWER
SUPER-HIT LOGO GAME!
commodore 64 electron BBC MICRO MEMOTECH

FELIX IN THE FACTORY

£8.95
(functions
and BBC Micro
version £7.95)

Race along the conveyor belt, leap the packages, and climb up the ladders to the shopfloor. Pitchfork the Gremline off the walkways, use the poison pouch to trap the Glitter Bot, and retrieve the silicon to keep the generator topped up.



COMMODORE 64 VERSION



Living with your 1541

Theory and practice of the 1541 disk drive from David Lawrence and Mark English's Disk Company

DISK STORAGE. The tape storage, depends on the fact that a thin layer of a ferrous metal compound is capable of being magnetised and demagnetised. When magnetised by proximity to a magnetic field, such compounds have the capacity to maintain their magnetised state.

What is not usually, very amounts of such compounds are capable of retaining the fact that an electromagnet has passed near to them, the degree of magnetism is preserved and the direction of the current in it. Having been magnetised, the film can be read by an electromagnet which has no current flowing through it, since it is a property of magnetomaterials that they produce an electric current when passed through a magnetic field — even the minute field caused by the flow of current.

Provided, then, that an electromagnet can be made to pass over the film sufficiently slowly, and the size of the electromagnet can be changed in a controlled manner, and provided that there is some built-in sufficient accuracy that the same position can be returned to once and then again, then the magnetic qualities of a thin layer of a ferrous compound can be used to store information.

In the context of a computer disk drive, the film of ferric compound is held on the surface of a 3½ inch piece of thin, flexible plastic. The electromagnet is provided by the disk drive in the form of a thin magnetic recording head capable of being moved with great accuracy in a straight line between the centre of the disk and its circumference. The movement of the head over the film is provided by the electronics of the disk. In essence then, a disk stores amounts of a recording shift and an electromagnet which can read in and set across it to it moves.

Information

The advantage of this system compared to tape is not simply the speed with which a single block of information can be stored — some tape systems are very fast indeed. The real power of the disk system lies in the speed at which it can find the information on the platter where it is to be stored. A good analogy is the difference between an ordinary audio cassette recorder and a long playing record. Provided that in both cases you know where the information you want is stored, in which track of an album you wish to play, the disk will provide you with

much faster access, since you are able to move the needle directly on towards the centre of the rotatable disk if it is positioned correctly. Once there, another kind of movement, or the revolution of the disk itself, allows you to recall what you want. With the tape system, you have only one kind of movement available to you and you will have to choose first to fast forward until the correct place is found.

Formatting

Within a long playing record, the disks used by the 1541 disk drive do not come with individual tracks laid out in a prearranged form. The film recording medium is, or should be, of a uniform consistency over the whole of the disk's surface. Breaking up the disk into easily identifiable "units" for the storage and retrieval of data is a task performed by the disk drive itself in a process called "formatting".

The purpose of the formatting process is to mark the disk magnetically with a series of areas called "sectors", roughly three quarters of an inch long. Sectors fall into two kinds which, as with long playing records,

are known as tracks, thirty-five of them in all, with the number of sectors varying according to the distance of the track from the centre of the disk — the further from the centre, the larger the track and the more sectors it will contain.

This simple process is accompanied by some more subtle ones which will enable the finely layered disk drive mechanism to identify its place on the disk and move the recording head. Each sector is created with an area of 256 bytes for the storage of data but also has written into it other information, such as the identification number of the disk, the number of the track on which the sector falls, and the number of the sector within the track, plus some standard data which the disk drive will later use to check that the geometry is synchronised with the disk and sectors.

Apart from the basic sectors prepared for the storage of data, an area of the disk (track 10) is reserved for the use of the "directory" or list of files which disk will eventually contain. When the disk is first formatted, only the first two sectors of track 10 will be used for this purpose — other sectors will be brought in as programs are copied. Included in the directory is an area of harmonising information known as the Block Allocation Map. The purpose of the BAM is to record, for every sector on the disk, whether that sector is available for the storage of information, or if it is occupied by part of an existing file.

Sector Zero

The BAM is positioned in the first sector (sector zero) of track 10 and consists of 140 bytes of disk space. This space is itself divided up into 28 units of four bytes each. The first byte of the group indicates the number of sectors available on one of the disk's 35 tracks. The next three bytes record the count of sectors 0—3, 4—11, and

TRACK - 10

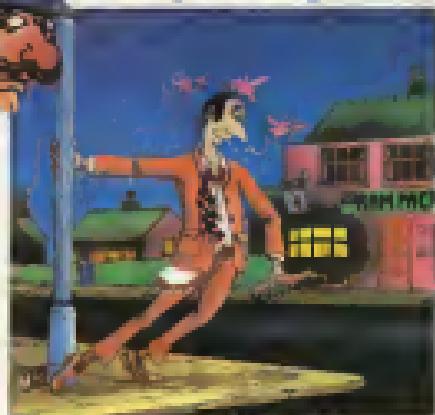
0	SEQ F	,PRG BLOCK 1
1	EOP F	,PRG BLOCK 1
2	LIST TAB F	,PRG BLOCK 14
3	APRICOT F,ROM	,SEQ BLOCK 1
4	LIST TAB F	,PRG BLOCK 12
5	SEQ ARRAYS F	,PRG BLOCK 4
6	TEST1	,SEQ BLOCK 1
7	SCREEN SAVE	,PRG BLOCK 1
8	PRG READ	,PRG BLOCK 1
9	SCREEN	,PRG BLOCK 1
10	SEQ F	,PRG BLOCK 3
11	EOP F	,PRG BLOCK 3
12	SEQ ARRAYS F	,PRG BLOCK 3
13	SEQ ARRAYS F	,PRG BLOCK 3
14	LIST TAB F	,PRG BLOCK 13
15	SCREEN	,PRG BLOCK 3
16	LIST TAB F	,PRG BLOCK 11
17	SCREEN	,PRG BLOCK 4
18	PRGX READ	,PRG BLOCK 3
19	SCREEN	,PRG BLOCK 3
20	SEQ F	,PRG BLOCK 4

Figure 1. Alternative of sectors in a typical track

ANIROG

NEW
TURBO 64
GAMES

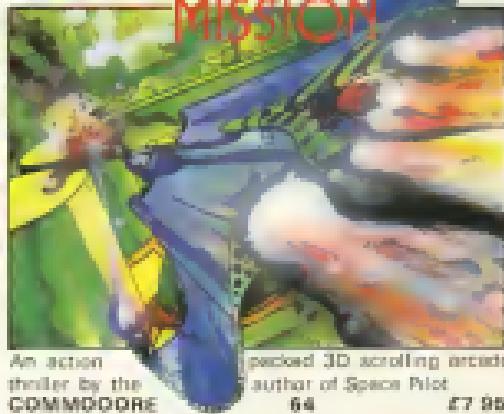
P.C. FUZZ



After a closing time at the local Gateway car snatches to a halt outside a bank. Ingenious methods employed by the Mafia to literally spirit away the loot from the High Street. Never fear, P.C. Fuzz is on patrol!

COMMODORE 64 £7.95

ZARGA MISSION



Also available on
Disk at £9.95

An action

thriller by the

COMMODORE

picked 3D scrolling arcade

author of Space Pilot

64

£7.95

TRADE INQUIRIES ANIROG SOFTWARE LTD. 28 WEST HILL, DARTFORD, KENT (0322) 85513/8
MAIL ORDER & HIGH STREET HORLEY SURRY 24 HOUR CREDIT CARD SALES HORLEY (0294) 8263
PAYMENT BY CHEQUE, PO, ACCESS/VISA, 50p POSTAGE & PACKAGING

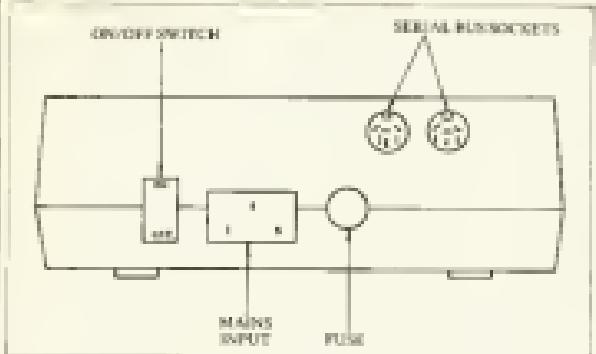


Figure 2. Block diagram of the 1541 disk drive.

411-11 of the corresponding track. If sector zero of the corresponding track is available for storage, for instance, because of the value stored in the second of the four bytes will be 'set' to equal the one earlier than zero). If the value of a whole byte is right here at zero, so that none of its bits is set, this would indicate that the eight sectors it is recording are all to be set by a current file. You may note that the RAM makes provision for recording 24 sectors (0-23), even though there is a maximum of 11 on the long outer tracks and less on the short and the centre. The RAM overcomes this potential difficulty by mapping these unnumbered tracks to consecutive ones when the disk is formatted.

Directory

If there are more than eight files on the disk, then another sector of track 11 will need to be added to the directory. The last sector of the directory is indicated by the fact that the first two bytes, which normally indicate the address of the following sector, point to track zero, sector 153, which does not exist.

Having set up the disk structure and the root directory, the disk is now ready for the storage of information in units which we know as 'files'. There are two types of file which are used most often are the program file, which is what is created when a program is SAVED, and the sequential file, which is created when a file is EDITED for the storage of rows of data; both these types are stored on the disk in exactly the same way, so we shall take for example the saving of an ordinary program file.

This is the sequence of events involved in SAVING a program file:

(1) The SAVE command is entered by the user and the OS instructs the disk drive to open a program file of that name.

(2) The disk drive checks its directory to see if a file of that name does not already exist.

(3) Provided that there is no file of the same name, the disk drive records the file name in the directory with a starting track and sector of 0,000 — it is now starting track.

(4) Using the RAM, which is always kept

in the disk drive memory, the drive begins to search for the correct track to the directory track, enters its position at the edge of the disk or in memory the count, which has a free sector (SECTOR0) and marks that sector as allocated to the RAM.

(5) Having found SECTOR0, the drive reads its position and then strips 236 bytes of the program from the RAM and places them into a buffer in the disk memory.

(6) Another search is now made for the next free sector other than the one discovered in step 4 (SECTOR1).

(7) The address of SECTOR1 is now written into the first two bytes of the disk buffer created in step 5.

(8) The whole of the contents of the buffer are now written onto SECTOR1 (discovered in step 5).

(9) SECTOR1 is later regarded as SECTOR0 and the process is repeated from step 5 until the drive informs the disk drive to close the file, by which time the whole of the program has been stored.

(10) For the final buffering of data, the address of the next sector (the first one

sector is set as track zero, sector 000) is stored for the rest of the file.

(11) The directory entry for the new file is altered to record the sector used for the beginning of the file and the number of bytes contained in the file.

By this time programs have been written to the disk, removed and rewritten during the course of time, the structure of the disk will appear most confused to the human eye, with a mishmash of sectors on each track allocated to a variety of programs. Provided that nothing happens to corrupt the directory, however, or the two bytes at the beginning of each sector which record the position of the last sector of the file, the disk drive will always be able to find the start of a file that it holds and read the file sector by sector without difficulty. An indication of the last valid structure that will be found on a well used disk is given by table 1. The table displays the contents of a single track of one of the disks used in the development of the basic

Powerful

So far, we have looked at disks and their layout but taken the activities of the 1541 drive itself for granted. It would be wrong to conclude this article, however, without a reminder that the 1541 is an extremely sophisticated and powerful piece of equipment, driven by a 4MHz microprocessor and its own separate Disk Operating System program which is as large as the ROM of the old model. The advantage of this is that, unlike disk drives for the majority of other personal microcomputers, the use of the 1541 drive requires no memory to be set aside by the host computer as far as either the handling of its buffers or the reading of the disk normally requires only to be informed of the name of the file to be read and can be well thus proceed without further help or one of the complex procedures it is capable of performing. For this reason, the 1541 is known as 'Intelligent drives'.

To operate a disk system you need one

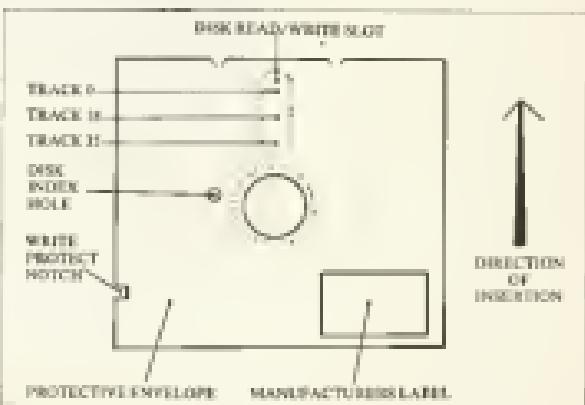


Figure 3. Diagram of a typical 1541 disk platter.

commodore 64 disk companion

essential routines for commodore disk users

david lawrence and mark england



•One Commodore 64 disk drive, together with a connecting lead, is all you need to expand your system. You will also require a total of 16 floppy disks — these normally come in boxes of ten but can be bought singly. It should not be forgotten that you will also require an extra power socket from which to run the disk drive.

Procedure

Assuming that your 64, its power unit, and the television — monitor which you normally use are all properly connected, and that the power is **OFF** to all the components, follow the procedure:

(1) Turn the 64 around so that the back of the machine faces you.

(2) Starting from right to left, you will find two rectangular slots or holes at which may be seen the ends of the 64's printed-circuit board.

(3) To the left of these two slots are two circular plug sockets. The one on the right is a single socket and is called the serial port. It is the means by which the 64 communicates with parallel drives such as printers and disk drives.

(4) If you have a printer connected to the serial bus socket, disconnect it for the time being.

(5) Plug into the serial bus socket (one of the small round pins) (DB9 pin) on the connecting lead which came with the disk drive.

(6) You can now turn the 64 around so that the keyboard is again facing you.

(7) Take the disk drive and place it next to the 64 so that its back is facing you.

(8) On the back of the 64 you will find the connectors shown in figure 1.

(9) Take the other end of the connecting cable you have just plugged into the back of the 64 and plug it into either of the sockets marked **SERIAL BUS** on the illustration.

(10) If you have a second disk drive, plug an connecting cable into the other socket. (If you wish to expand more than one then you will also have to alter the device number of one of the drives if the drives have not been permanently modified.) As

whole series of drives can be chained in this way if desired.

(11) If you have a Commodore computer monitor, you may now connect the video serial bus socket on the last disk drive to be connected to the screen.

(12) Ensure that the 1541, the Commodore 64, the TV — monitor (and the printer if connected) are all switched off. Plug the mains connector lead into the back of the 1541 and then connect the other end of the lead to the mains. Switch on the mains power to the 64, TV — monitor (and printer if connected). Wait 20 seconds and then switch on the equipment itself.

(13) Turn the 1541 around so that its front is facing you, being careful not to swing any of the leads under the screen.

(14) On the front of the 1541 you will see a small bar protruding. This bar will be in state of two positions: at slightly below the slot which goes across the front of the drive or at slightly above it.

(15) If the bar is in position a), press it in gently with your finger and allow it to move gently upwards in its groove.

(16) The disk drive door is now open. To make absolutely sure that the drive does not receive a disk on the surface of card-board used to protect the internal mechanical storage cartridge, close this slot by pressing gently down until a click and then opening it again.

(17) If a disk or the protective card is now visible, remove by sliding gently towards you.

(18) Insert the disk drive on (and the power is connected). Both the green and red lights on the front of the drive will come on, the drive will whirr for a second or so, then the whirring will stop and the red light will go out. If the red light does not go out, unplug the drive and check the connection and repeat this step. If the red light still

remains on, contact your dealer.

(19) Switch on your 64. You should see the same response as described under stage 10.

(20) Switch on your TV — monitor and stage 8 is on the output of the 64.

(21) You are now ready to use your Commodore 64 disk system.

Responses

The recommended sequence for switching on a disk system once it has been properly set up is: **PRINTER—DISK DRIVE—COMPUTER**.

Given in figure 2 is the layout of a typical 3.5 inch floppy disk. Such disks will serve you well if you observe a few simple rules:

(1) The disk is never removed from its protective envelope. It can receive quite substantial water damage and envelope will be read through the **READ—WRITE SLOT**.

(2) Flappy disks, or flexible disks, are designed to be differently treated or stored. By location, a disk is considerably less fragile, it should survive but there is no guarantee of this. There is always a slight amount of give in the disk when inserting it into the drive or removing it — do not worry about this, simply do not go to extremes.

(3) Your disks will have been supplied with a protective sleeve which covers most of the disk envelope and protects the **READ—WRITE SLOT**. When not in use, disks should always be replaced in the sleeve. Disks should preferably be stored upright in a plastic or non-magnetic box specially designed for the purpose. Never leave disks lying on any surface, out of their sleeves. It is common to see disks randomly laid lying about unpressed in the belief that, provided just the **READ—WHITE SLOT** on the front of



Figure 2: the 1541 disk drive — disk not included

the disk like this with the label(s) is not mounted, all will be well. Since the 3441 normally reads the disk from the back, this is unlikely to be true.

• Disk should never be exposed to a magnetic field, which includes leaving them on the top of the disk drive or the TV - monitor.

• Disk should never be exposed to extremes or extremes of temperature, which includes leaving them in direct sunlight.

• It should go without saying that you should never push the READ/WRITE switch of the disk.

• Cheap disks, like cheap tapes, can lead to disaster. Only you can decide how much user programs and data are worth to you.

To place the disk in the drive, first ensure that the disk drive door is open, then insert the disk so that the manufacturer's label is upwards and the READ/WRITE SLIDE and the data is towards the left. Push the disk gently and the horizontal slot on the front of the drive. If the disk catches slightly as it is pushed home, do not attempt to force it — remove it and try again. If you continue to have problems, check to ensure that another disk is not caught in the drive.

Remember that no problems are uncommon, the disk should be pushed fully home and no part of it protrudes and no contacts on the drive without pressure from the fingers. Finally, close the disk drive door — the disk drive cannot be mounted by the 3441 and this has been done. Data are removed from the drive simply

by opening the disk drive door, when the disk will slide out approximately on such. If the disk does not appear, close and open the door again. Disk which are released or come out of the drive can just be reached with the fingers, though no force should be used.

If disk continually sticks in the drive, either there is a problem with the disk itself or a label sticking out over the edge of the drive is faulty. Never push inside the drive with any kind of tool to try to free it stuck — especially if the drive is connected to the main.

Complex:

Never open the door of the disk drive while the red light is on and the drive motor is running, or damage to the disk may result. Note that some editions of the 3441 manual incorrectly state that the disk may not be removed while the green light is on. The green light is the disk power indicator and the only way to distinguish it is to switch off the power to the drive. Do not attempt to do this before removing the disk.

Like any other complex piece of equipment, it is possible for the 3441 to begin systematically from its usual high standard of reliability. It is possible, for instance, for errors to be introduced to the reading or writing of a program, or for some other problem to occur which prevents a disk command being properly carried out. In this case the red drive light will flash on and off and you should repeat the procedure which led to the error if you are sure that the mistake is not your own.

In some circumstances, it is possible for a user to develop where the 34 and the disk drive simply refuse to communicate with one another. Following the recommended troubleshooting procedures, the solution would be to remove the disk, to switch off the 34, and the disk drive and then to switch them on again in the correct order.

If the disk contains a program which is trying to save data too frequently it will continually read the disk and switching off the 3441 (and any other device connected to the serial bus, such as a printer), and then switching it back on again will almost invariably solve the problem. It is well to remember that, of all else fails, the Diagnostic monitor may well be capable of releasing the situation by saving the program until the disk system can be sorted out.

It is unlikely that the 3441 will give you many problems if you remember that it is a processor required machine which, unlike the 34, has moving parts which should not be subject to vibration, sudden shocks or excessive force (including strong sunlight).

Though it seems a small point to be given a separate section, always check that the disk drive door is open and the drive empty before switching off the drive. In fact, disks are seldom damaged by being left in the drive when it is turned off, but it can happen. ■

The *Chamomile At That Companion* by David Lawrence and Mark England is published by Sunshine Books at £7.95.



P.S. I sometimes wonder how I used to find the time to write before you bought his Wordcraft 64.

I used it to write articles before giving them to my editor. Paul uses it to prepare his university project reports.

John, from next door, borrows it to type the golf club reports, and the Vicars getting quite impatient, he uses it for the parish magazine.

Thank you Wordcraft 64 for making so many friends for us.

Wordcraft 64 costs only £48.95 inc. VAT and is available from all good computer retailers or direct from ourselves.

Derivative Wordcraft Ltd.
Head Office and Sales, Rector House,
East Street, Colchester, Essex CO1 2BB
Tel: (0206) 869414. Telex: 8607801 MCPCD G

PRIORITY MAIL ORDER

Postscript me	<input type="checkbox"/>	Follow-up enquiry	<input type="checkbox"/>	Report to	<input type="checkbox"/>
Enclosed Cheque/Credit Card Or Banker's Order No. 40000000000000000000000000000000					
Name	Gardiner				
HOBSONS	Gardiner				
	Gardiner				

CONTACT



GOTO 1 Computing 2 Personal 3 Adventure 4 Miscellaneous 5 Starnet Captains

know will work well with your particular needs.

There are some golden rules to watch out for when buying the "terminal resolution" software. The first is that communications can be fast, but watch out for the phone bill. You should measure what facilities the software has to help keep your costs down.

The second rule is one of cost — many software packages come in BASIC and require drivers, so the requires a good knowledge of communication.

Simple terminal software will allow you to logon to mainframe based services, view screens of information and type in messages while on line. Some bulletin boards will even let you have free software to help in the logon process and download software in ASCII or bin files.

Public databases

Public service databases offer more complex software that can allow you to edit and prepare messages offline for transmission over on-line, thus saving telephone time. Other features include user logins and system identity storage and may transmit news and forums (up to nine pages of information such as daily news or share prices).

Once you are hooked on communications, the next thing to explore is the massive on-line public databases you can log onto.

Commodore users have an extremely wide choice with two services most closely at them — MicroNet and CompuNet. These are in addition to already available services like bulletin boards and private information retrieval databases named in *Information* or *Computers*.

Both services are software and both offer different modems and terminal software.

MicroNet 800 offers what it describes as

"most of the net communication capability" with plenty of links, which can be used with any standard VME or V23 modem. The software comes in FIDAM and other terminal software. By other systems can be attached via a Fido link or gateway. Price is reckoned by the annual £49.95.

Special accounting software in the FIDAM to allow easy, but safe — from a software supplier's point of view — software downloading.

MicroNet will sell you a package with £300-00, £600-00 for around £75.00, although the main package should be suitable for related retail users.

One of MicroNet's, as Paul Form is CEO a year subscription which also lets you take many other FidoNet services like telephony, internet and Usenet news, travel and home banking. But, you will incur extra costs on MicroNet although messaging — or at least at the moment — is free and currently available from September on a local telephone call.

Friday does charge you access time-based rates during peak telephone times of 16 pence minute, but evenings and weekends are free.

Full details from MicroNet 800, Barratt House, Barlast Hill, London EC1.

CompuNet is in its formative stages and is not due for launch until late September, so direct comparisons are difficult at the time of writing.

This is a big added bonus with CompuNet — the first year subscriptions (which would normally be £300-00) is included in the price of the modem and special software for CompuNet. As £300 you get a £200-00/£300-00 modem, plus software, plus one year's use of CompuNet. However, once hooked up to CompuNet you logon by pay per use, other charges, though these level only really

depends on when and whom facilities you use.

CompuNet offers messaging like MicroNet, but at the same time offers facilities which downloading of free and commercial software, local call access to major UK centres, off-peak time free access, peak time (in effect having 100% off).

What is really attractive about CompuNet is the ability for users to upload their own publications or programs onto the network as the data is error corrected both ways. You can change for your own interests or as generated by the Jungle and CompuNet takes a 40% commission. The same applies for information you stay on.

Software Park

Protected software is also sold at the Software Park, which is where the popular computer game *Ultima IV* was born. It has a piracy prevention technique which prevents software from being copied easily. From CompuNet being run on another machine.

A combination of £100 is charged at the Park. Users are charged for viewing information pages, or 16 bytes of programs at 50p a day per page.

CompuNet expects to have a large shopping service operated by CompuNet — you can buy goods at discount prices and have a direct debit account — banking and publishing. Full details from Computer Information Group, 413 Ajax Avenue, Slough, Berks SL1 4BD, or via a dealer for details.

There are numerous bulletin board services scattered around the country which have resulted from the domain days of Tandy. There are normally held no public services and Discel which operates at 300/300 or 1200/1200. Run by Display Electronics, it offers telebanking, messaging and credit card shopping of computer Wysi to 14-11 Stage Way, Upper Norwood, London SE16. ■

THE GREAT SPACE





RACE

Vicsoft ready to head North

Will the *Carby* move mean better service from Vicsoft? Aye, there's the rub! Janet Rutherford talks to Chris Jenkins

VICSOFT has been putting some pretty bad press reviews — most bad again lately appear in the pages of computer magazines which run along predictable lines: "I read my order to Vicsoft and six weeks later they sent me half of it. I kept trying to phone them, but I couldn't get anyone... I'll still wait for my final bills, it's been three months now..." — and so on.

Janet Rutherford is one of the Vicsoft team. While acknowledging the service's poor problems, she's quick to defend its record: "Because my blood heat sometimes when I see letters in the computer press attacking Vicsoft's service — finally we aren't in a position to reply in individual columns, and seriously you never see letters being published which praise people. Because in mind the rest of the service, we only have a tiny proportion of orders which have problems."

Part of the problem has been the unanticipated response to the service. Vicsoft catalogues are now sent out with each new Commodore magazine, but this was to great fanfare; that software media were boasting: "We just understand the response we'd get — it's a miracle we're not planning to make next Christmas!"

Janet's full role is Computer Support Manager, and her responsibilities include Vicsoft and the Information Service. "I started with Commodore as personal secretary to Howard Somers, the UK general manager. I didn't have any real knowledge about computers, but the firm didn't mind me — probably I'd been working in the head office, so I'd had some experience using VDU's. I'd also had a lot of experience dealing with the public, which was useful, since a large part of a personal secretary's job is involved with keeping the public away from the boss!"

What drives

Janet's position as the general manager's secretary gives her a unique insight into the operations of all sections of Commodore UK, and an understanding of the company's customer relations policy. "I get on very well with Howard Somers — I think you should say his attitude to the public is 'firm, fair and friendly'. He's aware that we've had sympathetically with user problems, but the company has no intention of being soft — Commodore isn't the kind of company to dilute much out. Around 80% of job problems we find with are due to user error, so it's wrong to assume that the company is usually at

fault."

The technical support section has two experienced computer users available to answer questions, with a complete range of hardware and software available to check sources. "It's difficult to answer some telephone questions, where if someone claims that they're using a program correctly you can't check it over the phone. The only way to deal with user error is to be very patient! Our technicians are kept busy all day answering enquiries, but once we move to *Carby* we should be getting thicker lines people."

"Some of the questions we get about third-party software, which is sold through the Vicsoft catalogue, are more difficult to answer, and in those cases we sometimes have to refer people to the relevant software houses. If you have a technical query you must phone the information route number, which is given on all our advertisements — there's no point phoning Vicsoft, since it's purely a mail-order house, which doesn't have any technical people."

Routines

Some problems arise because of mistakes in the info manual or the Programmer's reference guide — "There's a one-page insertion sheet for the monitor, and an extra one page for the BBC — these are now being replaced with new machines, but if anyone needs a copy they should just contact the information centre. Also please let us know if you've seen you've spotted any other errors."

In-house training of technical staff should mean that the information centre staff are becoming more familiar with erroneous, though, are levied against the Vicsoft mail order service — so what have the problems been like?

"We send out a catalogue each quarter for the 64, and one for the Vic. We try to target the return dates so that the peak orders, which come about a month after the release of the catalogues, fall on different days, but in the past we've been caught out by understanding the designer will get. One of the main common complaints against Vicsoft was that the free gifts offered on placing the order were very slow at coming. This is because we ordered a certain quantity of disk covers and disk boxes, and these were much larger than anticipated. We went back to the manufacturers to get more supplies, and they just wouldn't do it. It was partly



Janet Rutherford and Vicsoft's successful though Vicsoft's fault for underestimating the tremendous volume of sales created by the 64 last Christmas

"Another problem is that since orders bulk about a month after the catalogue is released, we can receive anything between 100 and 300 software orders for each catalogue each day. This makes it very difficult to control our staffing levels, though staggered the catalogues does help."

In an attempt to control stock more efficiently, Vicsoft has appointed a stock controller. "Stock appears to be as portable as new computers. Sleepy's main frame is a Honeywell, and the *Carby* one, which is already running, is an IBM 4381. Ordering orders are entered via Vicsoft's VDT's. Cash checking is done by hand, and averages are sent to the Vicsoft warehouse, where the orders are packed and dispatched. All-out-of-stock items are recorded on the stock controller's CBM486, and new, unused modules for fresh parts to come in, we put in special orders. Books and tapes we can usually deal with fairly quickly."

Cartridges

"Some cartridges are manufactured in the Far East, they create more problems. No service, delivery takes up to nine weeks, but at one point we can arrange for air freight, which is expensive but only takes three days. This last emergency air delivery was of the International Super cartridge. It's been causing everything else for months, and I expect it will



Photo — "Carter's editor and execs have never

continued to do so at least until Christmas. At the moment we've only got seven copies in stock — perhaps it's time for another emergency order!"

Occasionally problems arise when programs are advertised. Then there is the advertising before it's programmed and forthcoming. Commodore is usually guilty of this, though supply problems for programs in production are not unusual. "When we start on Carter's, the space allotted to Viosoft will be much larger than the space we have here in Slough. Unfortunately we're the last to know, since the arrival of the new factory which is where Viosoft is the last to be completed. Commodore has assigned the space available in Slough, and Viosoft is expanding as fast as any part of the company. We are experiencing a better service after the merger, and don't anticipate much problem in the move itself."

Hindsight

Peter Hetheridge is a Northerner, and in such is only too pleased to be moving closer to home. "I think the move is good for the company, and it's good for me too. Everyone at Slough was offered jobs at Carter's and about 30% of the Viosoft-information centre staff are moving. I believe almost all of the software section have chosen to go. There will automatically be redundancies among those who chose not to go to Carter's. The move should be completed by the end of August."

What of the future of the Viosoft service itself? What will Commodore services be getting for their £1 annual subscription fee?

"We'll be continuing the special discount offers and the free gifts on joining, although it's largely a marketing decision what to offer. There'll probably continue to be a promotion based around disk drives, though the free floppydisk offer has now ended. Again, the obvious one that is really the precursor of the marketing department rather than Viosoft itself."

Mailing list

Janet was quick to point out that anyone can buy from Viosoft without having to join the club. "We do have many thousands of members, though — unfortunately, at the moment I can't give an exact figure. The situation is complicated because we also have a mailing list of around 100,000, which is made up from the registrants made up from those each machine sold. This list is probably very much out of date, and we're working on that so we can easily contact our members or people who perhaps bought their Viosoft several years ago and have now moved to other machines."

Viosoft is run semi-independently from Commodore, and is reported to make a profit. "In effect we buy books from Commodore — although we always seriously consider books — and we buy from outside suppliers. We then operate the mail-order service and hope to make a profit, which at the moment we're not. It's not a huge profit, but obviously if it did not too far it'd be at best zero! The information service, though, is purely that — a service for customers."

Future plans will obviously include software for the Plus/4 and C16. "We're not planning to push Viosoft as a hardware-supply service, since this involves stocking problems — any equipment sold would have to be passed back to us in the event of a problem, and people are understandably reluctant to do that."

Product

A catalogue devoted to software for the new machines must obviously wait until sufficient product is ready to make a worthwhile. "I know that there are several programs ready, or nearly ready, in the software department, and we have to wait for third-party software to come through too. Obviously we'll hit a big Christmas launch, but it's really impossible to say. A lot depends on the response from existing software houses."

On the future of the Vic 20, Janet was again vague. "The next Vic 20 catalogue has just gone to the printers, and it's the longest one. I don't see any signs of the demand for it still being falling off. Even if the machine is discontinued, there's such a large user base and there other software should continue to sell. As the majority of software is just not selling Vic, but an IVY and the various Peripherals. IVY mostly games for the Vic, many with educational aspects, while the IV's a good mixture of games, software and utilities. There's some signs of a move towards disk, but I think games and a lack of information about disk drives are still putting many users off."

Catalogues

The other change planned is in the nature of the Viosoft catalogue itself. "We have a new editor, Tony Lunn, who used to work as the mail-order service. She looks the service, and as Commodore tries to encourage people to go to an even higher level if they stay with us was the obvious choice." Janet's plan includes giving the catalogue most of a "club" feel, encouraging a feeling of membership as well as emphasising the financial benefits of joining Viosoft.

"We're thinking of doing things like giving away books, running competitions, having more promotional discs, and so on," commented Janet. "We want to make the catalogue that comes than just a list of software — something you can sit down and read through, perhaps pass around at school. Remember that is the case of the Vic, especially many of the readers are very young, and we want to give them more to enjoy."

Features

There's really no telling what Viosoft will do next in growth patterns at the present rate. Already Peter Hetheridge has taken on 16 people for the Carter's plan, and what the move to complete Viosoft can continue to expand in all directions.

Traveling back to Slough means even the taxi drivers wanted to know what was going on. "There you see that international Second game," he said. "It is as good as it's made out to be?" Another customer for Viosoft! ■

Computerama 64

the source

64 EXECUTIVE OUTFIT

£199.95

£399.00

£399

£199.90

DEAL ONE

COMMODORE 64-II

£150

£229

DEAL TWO

QUICKSHOT II
Deluxe Joystick Controller

£995

FREE

50p

Computerama

PRO-DIGITALIZED GAMER PLATERS can afford to be without a joystick. In some cases you'll find that there are no key combinations given with a game, and sometimes they won't do you much good even if they are provided — the games are so complicated that you'll have to have an intuition for a sequence to occur to be able to play them.

The ST and C64 joysticks are better than most computer ones, in that they are joystick parts provided by the machines. —



QuakeJoy 1 — industry standard

We used to worry about micefests. Since the standard Amico-clip D-socket has been adopted by Commodore, there's no reason to choose when you're shopping for joysticks. So here's a guide which will help you to choose the stick that's right for you — and show you how to match the scores you've always dreamed of.

All joysticks are the same, right? Wrong! When you're choosing the one that's right for you, you'll have to take into account the size of the handle, the type of grip, the



QuakeJoy 2 — ergo joy.

trigger type, any special gimmicks, and more.

Let's first look at an industry standard, one such you'll find in every shop. The first incarnation of the QuakeJoy One is manufactured in America and distributed here by Vidcon Electronics. It's a straightforward stick with a contoured grip

HARDWARE REVIEW

The joy-stick jury

Mega-capping David Fox judges the games controller

and the button looks on top of the handle and on the square base. Like all the other sticks reviewed here, I tried it out on Activision's *QuakeOne* (for the 64), an innovative implementation of the arcade classic *Defender* which requires the utmost in joystick control and quick firing.

The QuakeJoy One responds well to handling, and the big buttons are smooth.



Activision — QuakeOne

A great advantage is that the QuakeJoy One has four modes which make it can be attached to a flat surface. This makes it much easier to operate the additional keyboard controls which are required in many of the more complex arcade games. In *QuakeOne*, for instance, you need to operate Hyperquake and Smart Bomb controls by pressing your shoulder and operating the fire button for your lasers. Being able to attach the stick securely means that it's much easier to operate it one-handed, and leave the other hand free. The low-centered fire button makes left-handed operation easy. QuakeJoy One costs around £35-40.

Good points: Smooth response, works on base, fairly cheap.

Bad points: Probably wouldn't suit rough handling.

Another from Vidcon, distributed by Vidcon, is the very ergonomically named QuakeJoy Two. Again, this one has handles on the base and a square body, with a contoured grip. It differs from the QuakeJoy One in two major respects:

Firstly, it has a front mounted trigger fire button as well as a top-mounted thumb fire button, and secondly, it has a right fire option which leads back into the base.

I like the trigger style fire button very much — I find it much easier to operate than a thumbstick. The rest of us in Speculator like putting the fire button where it should have been in the first place. The rapid fire option is perhaps not the point, since it gives you an unfair advantage. Simply switch to rapid fire and



Pro-Jet — gun joy

hold down the trigger, and the stick will fire as fast as your computer can manage. Much faster than being able to squeeze off about five shots per second. QuakeJoy with the normal option, Rapid Fire included £31. It may sound like cheating, but there's nothing quite like it if you want to score a wave after waves of attacking mutants and reach 100,000 points. QuakeJoy II costs £31.95.

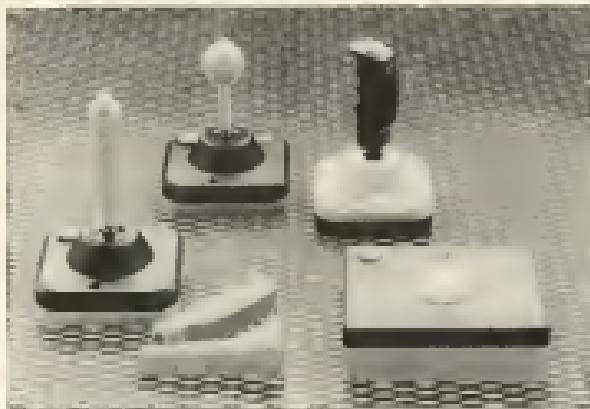
Good points: Trigger-style fire button, quick fire option.



Vidcon Quake Joy II — pleasure!

Bad points: Possibly perhaps a little overused for some players.

Another nice simple joystick is the Avro, made in Holland and distributed here by Dynamic. It has a strange wedge-shaped body which fits loosely on the hand, a single base mounted fire button which is suitable for left- or right-handed



The Wico range — 2-Way, 3-Way, Ball and Trackball

players, and a shaft topped with a mounted ball. The Arcade has a mousewheel control system which makes it very accurate indeed, and causes it to make a pleasant clicking sound in operation. The ball is located in large and operates smoothly. The Arcade costs £11.95.

Good points: Easy to hold, excellent microswitch system, available at Computerland outlets.

Bad points: No software, though it does have a stop rubber feet.

The Pro-Act Competition joystick from Sunbeam has a pyramidal-shaped body surrounded by a long, thin handle. The fire button is on the top, and there's a base mounted fire button too. Although the control is affected by the weight very precisely, there's very little movement on the handle. I never really got the feeling that I was flinging my space fighter around the sky. The Pro-Act costs £11.95.

Good points: Precise control, extremely durable.

Bad points: Little movement on handle, no rubber feet.

The Yamaha Beta 250 joystick makes a pleasant change; it has a flat rectangular base with three small feet located arranged in a triangle, and the handle is small and delicate. Again, the idea for those of you who really like to get into the act of playing in space places, but with a little practice you can achieve very precise control. The Yamaha was originally designed for the Sharp X6 computer, and is made in England — so if you want to be particular, it's the best in the field!

Good points: Very precise control with sprung-coated shaft.

Bad points: No rubber caps or rubber feet.

On over to the Japanese outfit from Wico, who have gained more experience than any other games control manufacturer through their work on actual arcade games. The Wico controllers are suitable for their sophisticated construction and extremely high reliability. Distributed by Computer Distributors Limited, the Wico range leads off with the Beta. Coming around £11, The Beta has a

very comfortable, contoured arm with a fast-reacting top thumb-tumbar. The shaft is precision-machined metal, so you can easily feel the cosiness — it should take anything you can dish out. The switch system works on a leaf principle, so as theory often relates.

Good points: Well engineered, nice springy feel.

In the Wico Command Control series, the standard joystick is the Gamma. At £13, you'd have to be a dedicated games player to fork out for this one, but you'll be getting the best as far as ergonomics and precision are concerned. It's similar in construction to the Beta, but has a sturdier shaft with a larger ball grip, on top of which is mounted the fire button. There's another button on the base, and a sliding switch which selects between fire ... air a good idea in my view, since if your thumbs get tired you should be able to use

the base trigger for a change.

The Gamma and Ball has a larger base which I found uncomfortable to grip, but I suppose I could get used to it.

Good points: State-of-the-art engineering for great accuracy.

Bad points: Cost, poor non-slip feet.

On to the Three-Way Debate joystick, which is basically a Beta Ball with interchangeable handles. There's a contoured grip, a smooth ball-bearing shaft and a thicker-shafted grip with a gearwheel-like head. At around £15 this stick would be recommended only to wealthy but indecisive computer gamers. Though it has the same high standards of construction as the Red Ball, it seems more sensible to try to find a stick the shape of which suits you perfectly — after all, the shape of your hand doesn't change between games.

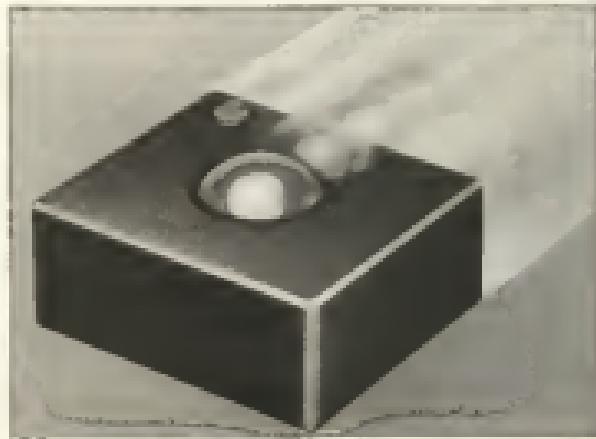
Good points: Well engineered, choice of handles.

Bad points: Cost, tendency for handles to slip off each other until they pull away automatically.

The last Wico device isn't a joystick at all, but a Trackball. At around £10, the Trackball consists of a plastic sphere mounted in a hexagonal rectangular base. You control the movement of your spaceship (or cursor, or whatever) by rolling the ball. This allows you to control the speed as well as the direction of movement. The big disadvantage is that in order to keep some steady moving, you must keep rolling the ball — you can't just put it over hard or left and keep flying. The result is that the Trackball is pretty useless in a game such as *Guardians*. But would be perfect for games like *Marble Command*, the arcade game in which it first appeared. It's a pity there aren't any versions of *Marble Command* for the PC.

Good points: Interesting design method gives full velocity control.

Bad points: Cost — cost! Limited application.



Yico' Wico joystick — electronic joystick designed in a "house"

Dual Electronics also offer a trackball, the Masterpiece. Features are almost identical to the Wico, but the price is a much more reasonable £19.99. The unit uses magnetic sensors, and, as Dual points out, therefore acts as an almost true analog input — making it ideal for applications beyond point-and-click, such as "mouse" functions.

Good points: Inexpensive trackball
Bad points: Again, not suitable for all pointing needs.

Back to more conventional products with an excellent design, the Super Champ from Dual Electronics. This ergonomic mouse sports features a standard pip, switch on the base, and both magnetic and optical tracking functions. At £12.99 this one is a really good buy — I enjoyed using it despite the fact that it looks like some dubious medical aid. When you're finished playing, just pull the handle and the entire long cable is wound into the large circular base — no more tangled wires!

Good points: Stylish on base, impressive pip function, cable storage feature, reasonably priced. Top seller in the US for the last two years.

Bad points: Handle probably isn't big for some players, can sometimes feel a bit loose lying around for hours at a time.

Our last collection comes from the American Sensors range, distributed here by Consumer Electronics Ltd. The emphasis of the range seems to be on small, well-engineered tools which concentrate on performance rather than flash. The Workstar has a small square block base

with a short shaft with a rounded end. The Pip button is on the left of the base top. Remarkably easy to hold because of its rounded shape and light weight, the Starfighter is fast and accurate, and costs around £19.99.

Good points: Easy to hold, good response, very light and small.

Bad points: Not good for left-handers.

Consumer's Tac-Off (Giantic Answerware Controlled) solves the problem. No left-handers — featuring a base only slightly larger and shorter than the Starfighter, with the same excellent response, it has in addition a short shaft with a ball end, and an extra pip button on the base. Cost is around £19.99.

Good points: Light, easy to hold, good response, suitable for left or right handers.

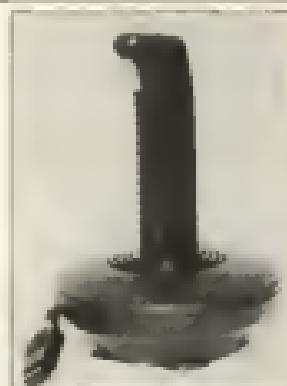
Bad points: A little expensive, rather unsophisticated tracking technology.

Half way between the two is the Sidekick, which combines the Starfighter's base and single pip function with the Tac-Off's shaft and ball pip. At £19.99, the Sidekick combines the good and bad features of the two others, namely,

Good points: Light, and accurate, well engineered.

Bad points: Not good for left-handers, again — they seem to be missing out!

The last in our menagerie would be of particular note, like the Trackball, not a pipster at all — it's a Joy-Sense. What, I hear you say, how can you measure a pressure? Well, the Sensate Joy-Sense is an electronic touch-sensitive controller. The lights of needles on the exterior



Super-Champ — a winner

track pad set on the rectangular base is enough to create a rectangle. A sliding track controls whether movement is free direction or eight directions, which is handy for selecting between, say, space games such as Galaxian or Pacman-style maze games where your choice of direction is limited.

The Joy-Sense also has touch-sensitive four controls, ordinary ones on right and left and rapid fire in the middle. We already mentioned the advantages of rapid fire, so those of you with no moral scruples about mowing down the enemy in battles will understand the attraction of the Joy-Sense. It's very difficult to learn the discipline of moving your thumb around the pad, but once mastered this controller is great to use. Mousers are much faster because there's no mechanical resistance to overcome, and the Joy-Sense should be twice as responsive as most. Start saving your £19.99 now!

Finally, although I'd choose the Super Champ or Quickshot Two if I were forced to pick a winner, it's worth saying that you can only pick the stick that's right for you by trying out as many as you can. Just don't mention my name to the shop assistant!

Contacts:
Vulcan Electronics Ltd, 200 Broad Street, London, W1-2BZ 081-569-0569

Dynetics Marketing Ltd, Unit 18, Cullen Close, Ilkley, Manchester, 061-775-1817

Sunstick, 100 Deansgate, Manchester, 061-834-6221

Yodimatic, Park Drive, Baldock, Herts, SG9-9AA 0420-441405

Computer Games Ltd, GCR House, Station Road, Loughborough, Leics, LE11 9AB 0509-744000

Dual Electronics, Unit E, Preston Ind Est, Denebury Road, Preston, Lancs PR5 2TJ 0772-277813

Dual Electronics, Cheshire Park, Finsbury Park, London, N1 2PF, 0171-834-12562

Consumer Electronics Ltd, Folkestone Maritime, ME11 0HS 0303-463-2199



Amenity range — Starfighter, Sidekick, Tac-Off, Joy-Sense

SCORE 2315

139



Bubble Bus presents...

Mission

"X"

An exciting Vic 20 game written by young star programmer Richard Clark of Bubble Bus Software

BUBBLE BUS SOFTWARE lives in a converted grocery store in the Meadow in Brixton, and has sold its computer games on Vic 20 since June last year programme Richard Clark.

Richard walked into 'Bubble Bus' office at the age of 16 with a stack of programs. Seeing his potential, Bubble Bus asked Richard to write a program, Bumping Baggies, which earned one out of the company's biggest successes.

Richard started programming on the ZX81, and moved onto the Vic 20 two years ago. He taught himself machine code programming, then purchased his first Writing Bumping Baggies took him three months, working at weekends.

Now that Richard's finished his second VIC level action, he's taking him on full time as a 4th programme.

His next project is Clumsy Fighter, in which the player takes on the role of an untrained, inept fighter, battling different enemies on a complex of bases.

As for Bubble Bus, the company, which started two years ago producing 16 million, is now concentrating more on games. With the success of the pixel adventure Shredder for the 48, and the popular Dark Side, both written by Nick

Bennett, Bubble Bus has established a division, which continues to prove forthcoming projects include Bubble Race, a car simulation by Paullands version Terry O'Dea, and the action packed Quadrille, which includes Word Wizard, Power Phaser, Laser Phaser and Asteroid as options.

Bubble Bus will continue to work on the 48, although ZX80, and Sinclair machines also figure in future plans.

Mission X uses the full potential of the unexpanded Vic 20. It's a fast moving 3-D game featuring impressive use of sound and colour.

It's a three-stage game, in which the first part involves using your space fighter to knock flags off the top of enemy fortresses. Once this has been done the only way to proceed is by passing through as many fuel gates as possible. Finally you have to land your craft on the landing

Dot F1 for forward thrust, and F3 to keep the ship level. Use number and the plus signs to left, right and across 100 times the flag number. Going through a fuel gate scores 200 and 30 fuel units. Completing a level scores 10000 fuel times the level number.

There are eight levels of difficulty, with

the height of the building becoming more varied and more stars appearing in the last game section.

The program is in two parts. You should first type in program one, and save it as MISSION X. Then type in program two and save it after the first part. Reload in the game part load and run the first program, and it will load in the next section.

The first program sets up the defined graphics and a small machine code screen scrolling routine, and the second program is the actual game.

180-128 Set up variables
280-240 Set up game display
300 Access word routine
180-128 Check for collisions
380 Display graphics
400 Cell memory display routines
450-748 Update and display score
880-900 Check for keyboard inputs
480 Check for fuel gate
1600-1650 Display buildings and flags
1200-1350 Display fuel gates
2000-2050 Display landing pad
2400-2450 Check for crash
4000-4110 Completed level

1600 Your place in the cockpit, and good luck with Mission X! ■

1 POKER46.26 POKER45.249 PRINTCHR\$(-1,0)
2 POKER1.8 POKER2.29 POKER3.8 POKER5.29

3 COSINE3000

18 FORL=67370673+72 REFLK POKER-X NEXT

28 BPRHT2.152.72.130.72.156.169.229.133.87.169.36.130.86.165.87.220.1.132

29 DTRT203.165.89.203.8.133.96.162.12.168.20.136.177.89.145.87.136.280

48 DTRT249.169.32.145.87.24.163.87.165.22.153.87.144.2.210.89.24.165.89.165.22

52 DTRT133.89.144.2.236.96.280.286.217.164.170.166.163.104.96

68 FORB=7168701673 POKER.FEED@R254269:1.HEXT

REFERENCES





PRODUCTS for the Commodore 64
32-COLUMN GRAPHIC CARD
 • Digital color
 • Monochrome or 16 colors screen with 32 columns
 • 16 colors screen plus palette
 • Built-in palette selection
 • User's own palette for colors
 • Automatic color selection
 • Resolution up to 640x400 pixels
 • 16 colors screen with 32 columns
 • 16 colors screen with 32 columns
 • 16 colors screen with 32 columns

PERIPHERAL EQUIPMENT
COMM-64
 COMM-64 is a serial interface card
 • RS-232C
 • IEEE-488
 • Parallel port
 • Bidirectional
 • 8 bits parallel
 • 16 bits parallel
 • 32 bits parallel
 • 64 bits parallel
 • 128 bits parallel
 • 256 bits parallel
 • 512 bits parallel
 • 1024 bits parallel
 • 2048 bits parallel
 • 4096 bits parallel
 • 8192 bits parallel
 • 16384 bits parallel
 • 32768 bits parallel
 • 65536 bits parallel
 • 131072 bits parallel
 • 262144 bits parallel
 • 524288 bits parallel
 • 1048576 bits parallel
 • 2097152 bits parallel
 • 4194304 bits parallel
 • 8388608 bits parallel
 • 16777216 bits parallel
 • 33554432 bits parallel
 • 67108864 bits parallel
 • 134217728 bits parallel
 • 268435456 bits parallel
 • 536870912 bits parallel
 • 1073741824 bits parallel
 • 2147483648 bits parallel
 • 4294967296 bits parallel
 • 8589934592 bits parallel
 • 17179869184 bits parallel
 • 34359738368 bits parallel
 • 68719476736 bits parallel
 • 137438953472 bits parallel
 • 274877906944 bits parallel
 • 549755813888 bits parallel
 • 1099511627776 bits parallel
 • 2199023255552 bits parallel
 • 4398046511104 bits parallel
 • 8796093022208 bits parallel
 • 17592186044416 bits parallel
 • 35184372088832 bits parallel
 • 70368744177664 bits parallel
 • 140737488355328 bits parallel
 • 281474976710656 bits parallel
 • 562949953421312 bits parallel
 • 1125899906842624 bits parallel
 • 2251799813685248 bits parallel
 • 4503599627370496 bits parallel
 • 9007199254740992 bits parallel
 • 18014398509481984 bits parallel
 • 36028797018963968 bits parallel
 • 72057594037927936 bits parallel
 • 144115188075859680 bits parallel
 • 288230376151719360 bits parallel
 • 576460752303438720 bits parallel
 • 1152921504606877440 bits parallel
 • 2305843009213754880 bits parallel
 • 4611686018427509760 bits parallel
 • 9223372036855019520 bits parallel
 • 18446740713710039040 bits parallel
 • 36893481427420078080 bits parallel
 • 73786962854840156160 bits parallel
 • 147573925709680312320 bits parallel
 • 295147851419360624640 bits parallel
 • 590295702838721249280 bits parallel
 • 1180591405677442495680 bits parallel
 • 2361182811354884991360 bits parallel
 • 4722365622709769982720 bits parallel
 • 9444731245419539965440 bits parallel
 • 18889462490839079930880 bits parallel
 • 37778924981678159861760 bits parallel
 • 75557849963356319723520 bits parallel
 • 151115699926712639447040 bits parallel
 • 302231399853425278894080 bits parallel
 • 604462799706850557788160 bits parallel
 • 1208925599413701115576320 bits parallel
 • 2417851198827402231152640 bits parallel
 • 4835702397654804462305280 bits parallel
 • 9671404795309608924610560 bits parallel
 • 19342809590619217849221120 bits parallel
 • 38685619181238435698442240 bits parallel
 • 77371238362476871396884480 bits parallel
 • 15474247672495374279376960 bits parallel
 • 30948495344985748558753920 bits parallel
 • 61896990689971497117507840 bits parallel
 • 123793981379942994235015680 bits parallel
 • 247587962759885988470031360 bits parallel
 • 495175925519771976940062720 bits parallel
 • 990351851039543953880125440 bits parallel
 • 1980703702079087907760258880 bits parallel
 • 3961407404158175815520517760 bits parallel
 • 7922814808316351631040535520 bits parallel
 • 1584562816663270326208051040 bits parallel
 • 3169125633326540652416052080 bits parallel
 • 6338251266653081304832054160 bits parallel
 • 12676502533306162609664058320 bits parallel
 • 25353005066612325219328056640 bits parallel
 • 50706010133224650438656053280 bits parallel
 • 101412020266449200877312056560 bits parallel
 • 202824040532898001754624053120 bits parallel
 • 405648081065796003509248056240 bits parallel
 • 811296162131592007018496052480 bits parallel
 • 1622592324263840014036992054960 bits parallel
 • 3245184648527680028073984059920 bits parallel
 • 6490369297055360056147968059840 bits parallel
 • 12980738594110720112295936059680 bits parallel
 • 2596147718822144022459864059360 bits parallel
 • 5192295437644288044919728059120 bits parallel
 • 1038459087528856089839456058720 bits parallel
 • 2076918175057712179678912058400 bits parallel
 • 4153836350115424359357824056800 bits parallel
 • 8307672700230848718715648053600 bits parallel
 • 16615345400461696437431296051200 bits parallel
 • 33230690800923392874862592050400 bits parallel
 • 66461381601846785749725984049600 bits parallel
 • 132922763203695771499459760492800 bits parallel
 • 265845526407391542998919520485600 bits parallel
 • 531691052814783085997838404811200 bits parallel
 • 1063382105629566171995676804822400 bits parallel
 • 2126764211259132343991353604844800 bits parallel
 • 4253528422518264687982707204889600 bits parallel
 • 8507056845036529375965414404819200 bits parallel
 • 17014113690732658759930828804838400 bits parallel
 • 34028227381465317519861657604876800 bits parallel
 • 680564547629306350397232352048153600 bits parallel
 • 1361129095258612700794464704048307200 bits parallel
 • 2722258190517225401588929408048614400 bits parallel
 • 5444516381034450803177858816048128800 bits parallel
 • 10889032762068801606355717632048057600 bits parallel
 • 217780655241376032127114352640480153600 bits parallel
 • 435561310482752064254228705280480307200 bits parallel
 • 871122620965504128508557410560480614400 bits parallel
 • 1742245241930088256017114821120481228800 bits parallel
 • 3484490483860176512034229642240482457600 bits parallel
 • 6968980967720353024068459284480484915200 bits parallel
 • 13937961935440706048136918568960489830400 bits parallel
 • 27875923870881412096273837137760489760800 bits parallel
 • 55751847741762824192547674275520489521600 bits parallel
 • 11150369548352564838509534851040489043200 bits parallel
 • 22300739096705129677019069702080488986400 bits parallel
 • 44601478193410259354038139404160488972800 bits parallel
 • 89202956386820518708076278808320488945600 bits parallel
 • 178405912773641037416152557616640488931200 bits parallel
 • 35681182554728207483230511523328048891200 bits parallel
 • 71362365109456414966461023046656048889600 bits parallel
 • 142724730218912829932920460093232048884800 bits parallel
 • 285449460437825659865840920186464048882400 bits parallel
 • 570898920875651319731681840372928048881200 bits parallel
 • 11417978417513026394633636807558560488806400 bits parallel
 • 22835956835026052789267273615117120488803200 bits parallel
 • 45671913670052105578534547230234240488801600 bits parallel
 • 91343827340104211157068594460468480488800800 bits parallel
 • 182687654680208422341371889321336960488800400 bits parallel
 • 365375309360416844682743778642673920488800200 bits parallel
 • 7307506187208336893654875572853478404888001000 bits parallel
 • 14615012354166677873297511445706956804888000500 bits parallel
 • 292300247083333557465950228914139136048880002500 bits parallel
 • 5846004941666671149319004578282782720488800012500 bits parallel
 • 116920098333334222966380091565655654404888000062500 bits parallel
 • 2338401966666684459327601831313110888048880000312500 bits parallel
 • 4676803933333368918655203662626221760488800001562500 bits parallel
 • 93536078666667378373104073253124435204888000007812500 bits parallel
 • 187072157333334756746208146506288864048880000039062500 bits parallel
 • 3741443146666695134924162930125777280488800000195312500 bits parallel
 • 74828862933333902698483258602515545604888000000976562500 bits parallel
 • 1496577258666680539697661172050311088048880000004882812500 bits parallel
 • 2993154517333360279395322344100622160488800000024414062500 bits parallel
 • 59863090346666805587906446882012443204888000000122070312500 bits parallel
 • 1197261806933336011158532937640248864048880000000610351562500 bits parallel
 • 2394523613866672022317065875280497280488800000003051757812500 bits parallel
 • 47890472277333440446341317505609945604888000000015258789062500 bits parallel
 • 957809445546668808926826350112198912048880000000076293945312500 bits parallel
 • 1915618891093337617853652702243978240488800000000381469726562500 bits parallel
 • 38312377821866732357073054044879564804888000000001907348632812500 bits parallel
 • 76624755643733444714146108089591296048880000000009536743164562500 bits parallel
 • 153249511287467329028322176179182592048880000000047683715822812500 bits parallel
 • 3064980225749346580566443523583651840488800000000238418534114562500 bits parallel
 • 61299604514986931611328870471673036804888000000001192092670572812500 bits parallel
 • 12259920902977386322265754094334607360488800000000059604633528562500 bits parallel
 • 24519841805954772644531508188669214720488800000000029802316764312500 bits parallel
 • 490396836119095452890630163773384294404888000000000149011583826562500 bits parallel
 • 98079367223819090578126032754676858880488800000000007450579191312500 bits parallel
 • 1961587344476381811562520655093537177604888000000000037252895956562500 bits parallel
 • 39231746889527636231250413101870743520488800000000001862644797812500 bits parallel
 • 7846349377905527246250082620374147064048880000000000093132239892812500 bits parallel
 • 156926987558110544925001652407828540804888000000000004656611974562500 bits parallel
 • 3138539751162210898500033048156570816048880000000000023283059874562500 bits parallel
 • 62770795023244217970000660963114416320488800000000000116415299374562500 bits parallel
 • 12554159004648843594000132192628823264048880000000000058207649689062500 bits parallel
 • 25108318009297687188000264385357646528048880000000000291038248445312500 bits parallel
 • 50216636018595374376000528771115293056048880000000000145519124222812500 bits parallel
 • 10043327203190678752000105615423058611204888000000000072759562044562500 bits parallel
 • 2008665440638135750400021123046017222404888000000000036389781028562500 bits parallel
 • 401733088127627150080004224609203444804888000000000018194890514312500 bits parallel
 • 803466176255254300160008449218406896048880000000000090974452571562500 bits parallel
 • 160693235251058660032001689843681379204888000000000045487226114312500 bits parallel
 • 321386470502117320064003379687235984048880000000000227436130571562500 bits parallel
 • 64277294100423464012800675937447196804888000000000011371806528562500 bits parallel
 • 128554588200846928025601351874943593604888000000000056859031056562500 bits parallel
 • 257109176401693856051202703598877972804888000000000028429515528562500 bits parallel
 • 514218352803387712102405407997755945604888000000000014214757764312500 bits parallel
 • 1028436705606775424204810959955111888048880000000000071073788828562500 bits parallel
 • 2056873411213550848409621919855223776048880000000000035536894414312500 bits parallel
 • 41137468224271016968192438397104475520488800000000000177684472071562500 bits parallel
 • 8227493644854203393638487679420895104048880000000000088842236414312500 bits parallel
 • 164549872897084067872769533588417802080488800000000000444211182071562500 bits parallel
 • 32909974579416813574553906717683560416048880000000000022210559103562500 bits parallel
 • 65819949158833627149107813435367120832048880000000000111052795571562500 bits parallel
 • 1316398983176672542982156268707342416640488800000000005552639778562500 bits parallel
 • 26327979663533450859643125374146848332804888000000000027763198891562500 bits parallel
 • 5265595932706690171928625074829369666560488800000000001388159944562500 bits parallel
 • 10531191864413380343857250379658739331204888000000000069407992289062500 bits parallel
 • 21062383728826760687714500759317478662404888000000000034703996456562500 bits parallel
 • 42124767457653521375429001518634957324804888000000000017351998228562500 bits parallel
 • 84249534915307042750858003037269914649604888000000000086759964571562500 bits parallel
 • 16849866983061408550176006074539829299204888000000000043379939153562500 bits parallel
 • 3369973396612281710035200121486965859840488800000000002168996982671562500 bits parallel
 • 67399467932245634200704002429739317196804888000000000010844984913562500 bits parallel
 • 1347989358644912684014080048594786343936048880000000000542249248671562500 bits parallel
 • 269597871728982536802816009718957268776804888000000000027112462434312500 bits parallel
 • 539195743457965073605632019437914535553604888000000000135562312171562500 bits parallel
 • 10783914869159301472112640388792890710720488800000000006778115608562500 bits parallel
 • 2156782973831860294422520777558577420480488800000000003389057804312500 bits parallel
 • 4313565947663720588855041555117154809604888000000000016945289021562500 bits parallel
 • 86271318953274401777100831102343096192048880000000000847264451071562500 bits parallel
 • 17254263790654880355420166220468619238404888000000000042363222553562500 bits parallel
 • 3450852758130976071084032124093723847680488800000000002118161127671562500 bits parallel
 • 69017055162619521421680642481874676953604888000000000010590805635312500 bits parallel
 • 13803411032523842843361284496374353907204888000000000052954028178562500 bits parallel
 • 276068220650476856867225689927477078144048880000000000264770140891562500 bits parallel
 • 5521364413009536137344513798549441562880488800000000001323850704471562500 bits parallel
 • 110427288260190722746885279770988831257604888000000000066192534091562500 bits parallel
 • 220854576520381445493770559541977662552048880000000000330962670471562500 bits parallel
 • 44170915304076289098754111908395532504804888000000000016548134023562500 bits parallel
 • 883418306081525781975082238167870650096048880000000000827406701171562500 bits parallel
 • 17668366121630515639016444723377413019204888000000000041370335058562500 bits parallel
 • 353367322432610312780328894467548260384048880000000000206851675291562500 bits parallel
 • 7067346448652206255606577889350965207680488800000000001034258376471562500 bits parallel
 • 1413469289310441251213155577870193041536048880000000000517129188291562500 bits parallel
 • 28269385786208825024263111557403860830720488800000000002585645941871562500 bits parallel
 • 5653877157241765004852262231480772166144048880000000000129282297094312500 bits parallel
 • 1130775431448381009654524462961544332288048880000000000646411485471562500 bits parallel
 • 226155086289676201930904892582308866457604888000000000032320574274312500 bits parallel
 • 4523101725793524038618097851646177731536048880000000000161602871371562500 bits parallel
 • 904620345158704807723619570329235552707204888000000000080801434274312500 bits parallel
 • 1809240690317409615447239140658511054048048880000000000404007171371562500 bits parallel
 • 36184813806348192308944782813170220809604888000000000020200358568562500 bits parallel
 • 72369627612696384617889565626340441619204888000000000010100179284312500 bits parallel
 • 144739255225392792357789131252680882838404888000000000050500896421562500 bits parallel
 • 28947851045078558471557826250536176416640488800000000002525044821071562500 bits parallel
 • 578957020901571169431156525026835323328048880000000000126250241053562500 bits parallel
 • 1157914041803142338862310500534667066648048880000000000631251205

ATTENTION! ATTENTION! ALL COMMODORE USERS!

Do you use tapes? Are you sick and tired of waiting for your programs to be loaded? Saved from ever the repeat? Then you need a **TORNADO**! Tornado allows you to save/Load/Verify your Spectrum machine code programs faster than a Commodore disk drive does! Due to popular demand, Tornado now comes with more and more powerful commands plus extra instructions to assist you in making fast versions of your existing machine code/master programs. Tornado is available on tape for C64/128 and VIC+VIC2.

Do you have Reset/Stop and Restore keys often fail? Do you want to come out of those crashes? Or get into those unbreakable programs? Then what are you waiting for, get yourself a

BREAKER! Panel switch and let your computer know who is the boss! Breaker can be connected to your machine in seconds, no soldering. Included with the Breaker need switch is a break-in software on tape. Breaker is now available for any Commodore 64 or VIC 20.

Available for Commodore 64 and the VIC 20 now is the

ROM-FILE, which contains a complete disassembly of Commodore VIC 20 ROM with comments! As well as a complete description of all 6502/6510 instructions and addressing modes + a complete listing of a machine code monitor and more!

Please make cheques/PO payable to:

BSF COMPUTER SERVICES LTD.
DEALERS AND GENERAL ENQUIRIES
TEL: 071 5862346

HAD SUMMER OFFER!
A FREE BREAKER WITH
EVERY TORNADO IF YOU
USE THIS COUPON!

Please send me _____ Tornado v2.0 + my free Breaker
Please send me _____ Breaker v2.0
Please send me _____ Rom-File v1.0
Enclosed is a cheque/PO made to the amount of £_____
Name: _____ Company: _____
Address: _____

Please use this form and block letters only. All prices are exclusive of postage and packing and VAT. Please post to BSF CSL, 29-33 BOLSOVER STREET, LONDON W1.

NEW ORIGINAL GAMES FOR THE COMMODORE 64

NIGHTMARE PARK is in fact a compilation of 10 games. The idea of the user is to play as many as possible, racing through numerous levels of frantic adventure! These challenges increase as you progress and always release by the sheer good luck. Playing Nightmare Park is an idea game for all ages.

PRICE £7.99

DOTS & BOXES is an original game where Player and the computer take turns in connecting lines in a drawing in time between two dots. The aim of the player is to win the most boxes when finally connecting the number of boxes given away on the computer.

PRICE £9.95

HEXAPAWN is an original and exciting game. The opponent controls his pieces in the strategy that is programmed to learn from the user's moves to improve its own strategy.

PRICE £5.95

CHOPPER LAND Your mission is to rescue as many people from your base and BMU SAFETY. An exciting new game full of surprises.

PRICE £7.99

Send Cheques/PO:
A.J.R. SOFTWARE

86 Avenon Crescent
Hamilton, Scotland
Tel: 0506 282036

**DEALER ENQUIRIES
WELCOME**

Voucher

Commodore 64 and
VIC 20 users now have
access to Commodore
Software via our
newly established
MAIL ORDER DEPT.
Address: 2075A
LAWRENCE AVENUE
KINGSTON ONTARIO,
CANADA K7L 1M2

UK'S LOWEST PRINTER PRICES !

PRINTERLAND

ORDERED TODAY - DELIVERED TOMORROW

DOT MATRIX

SEIKOSHA GP 50	£120.00
SEIKOSHA GP100	£150.00
EPSON SX 80	£185.00
EPSON SX 80 F/T	£214.00
EPSON SX 100	£235.00
EPSON FX 80	£217.00
EPSON FX 100	£243.00

DOT MATRIX PLUS PAPER LETTER QANTITY	
CANON PH100A	£275.00

DAISY WHIRL

LJX 6100	£345.00
SISTHER MH15	£345.75
EPSON CX100	£366.00

WE SPECIALISE YOU BENEFIT

DRAGON PRINTER CABLES
AND ACCESSORIES IN STOCK
VARIOUS COMMODORE PRINTER
INTERFACES IN STOCK.

Educational, OEM and plus Discount Orders Welcome
Phone 0151 452 5167, Fax 0151 452 5168, Post 2200, Office 200
Reception, Unit 202, New Business House, St. Helensgate, HERTFORDSHIRE SG1 1UP
TEL: 01442 874100

On the beach

Can you establish a beach head, save Emeralds and go 10 rounds with a boxing champion? Find out in Pete Gammie's latest games review



REVIEW BY PETE GAMMIE The second stage that you can't reach on old ship war titles. There isn't anything to prevent some interesting games for the Vic 20 (albeit with 8K expansion).

One of their newer successes is the very good *Tank Commander*, which would have required a "use" screen, if it wasn't for the fact that my copy of the program managed to crash every time I played it. Maybe the boy wonder.

You are in sole charge of a tank, and need to try your best to destroy all the enemy tanks, and in particular you have to keep an eye out for two changes over armaments, one red and one blue. Destroying these two takes you onto the next level of play, where even more enemies are sent to prevent you completing your mission.

Some games do give you the bonus while playing them, and *Quetzalcoatl* is one of them. An exciting cover to the cassette video box that accompanies the cassette itself at a touch of generosity about the game. The description on the back of the cover also suggests that you are about to witness the most amazing game that you've ever seen on a Vic 20. But personally, I found this sheet of writing as exciting as watching Bechtel TV.

This sheet used to creep in around about the time when the instructions tell you to remove all memory expansions from your Vic, while the cassette informs you that the game requires 8K memory expansion. Something appears to have got

wrong somewhere, since it does in fact need 8K of extra memory.

An Quetzalcoatl, it is your job to rescue the pretty girl Emeralds, who is about to be kidnapped by the wicked Count ZF-Amp. He controls his henchmen. Since Quetzalcoatl is apparently an ugly white knight, it wouldn't have thought that Emeralds would have been too pleased about being rescued by him, but there you go.

At first different levels of play, it says. You have to keep moving along through different levels in order to reach the spot where the extraction of Emeralds is about to take place. With enemy guards after you, fireballs being hurled at all directions, and spaces being cleared above the place, this seems to be no easy task.

Supplied by Advanced Computer Entertainments, who have produced some impressive stuff for the Commodore 64, this is not one of life's gems. There's far better stuff around.

Revelation

Once the Commodore 64 was, well, Revelation, from its designer that brought us *Star Field*, the story of the mad covenanter goes around predicting doom from apocalyptic Yes. So let's set it up, and this is another game that is interesting without being outstanding.

The cassette cover has us a game of Up-N-Down proportions depicting ancient lands based on moonlight, with flying bats and fire-breathing dragons stalking

the countryside. However, the game itself comes over as a cross between *Boggsland* and *Space Invaders*.

There are different masters within the family concern than you have in *Invasion* before meeting the major invaders just. I hope he's worth the wait, since I never managed to get that far. In each arena are a number of masters which have to be destroyed before you can flush off all the invaders living on that level. With a nice graphical touch, everything scrolls around the screen at a reasonable speed as you move around shooting the masters and shooting or dodging the invaders.

As far as I'm concerned, Horus can go and take a running jump, since the terrible hide and seek is far from giving everywhere there goes, and there is such a thing as overkill. However, *Horus Goes Shang*, originally a Spectrum game from Melody House, has now made the transition over to the Commodore 64.

As with some other notable games that have appeared on the 64 after moving into us on the Spectrum, nothing much seems to have changed here. You're in charge of Horus, a cool looking space, who decides to go alone. To do that he uses fire of all sorts his skin tattered cheap in no soldier's uniform from the local shop as the other side of a busy highway.

Using keyboard or joystick you must manouevre Horus across the road, watching out for the fast moving motorbikes and the slow moving lorries. Can travel along at an intermediate pace

and should Blaster be unfortunate enough to collide with one of them another one of your original 10 dollars gets eaten up in deductions from Blaster. These collisions are never fatal, and the game only ends when you run out of money. Blaster can cross the road and enter the ski shop. Here he can get to get back across the road again before getting into the six slopes themselves.

Here there are few hazards, other than Blaster's inability to do as he's told. There is no point way every now and again as you race down that shadow slope, and a collision with one of them may or may not break your skis, depending on your forces at the time. Missing a set of steps won't point 100m your total, and there are also a number of edges lying around that those you suddenly off course should you happen to bump into one.

Finally the coins will earn you back at the ski shop and set for a trip across the road once more before getting into the seventh six run.

This is only marginally different from the first, and presumably the rest of them follow suit. Should you be unlucky enough to break your skis, you start off on the wrong side of the road again. A little thought on the part of the programmer would have turned this very cocky game into quite a good one, as a number of silly things seem to have been put into it. But blimey, running out of money ends the game, but not necessarily. You can spend ages trying to get across the road in the ski shop, thinking that you're actually getting somewhere. Only when you've used the



CoinRun 2...a space-based air racing aero-mechanical adventure

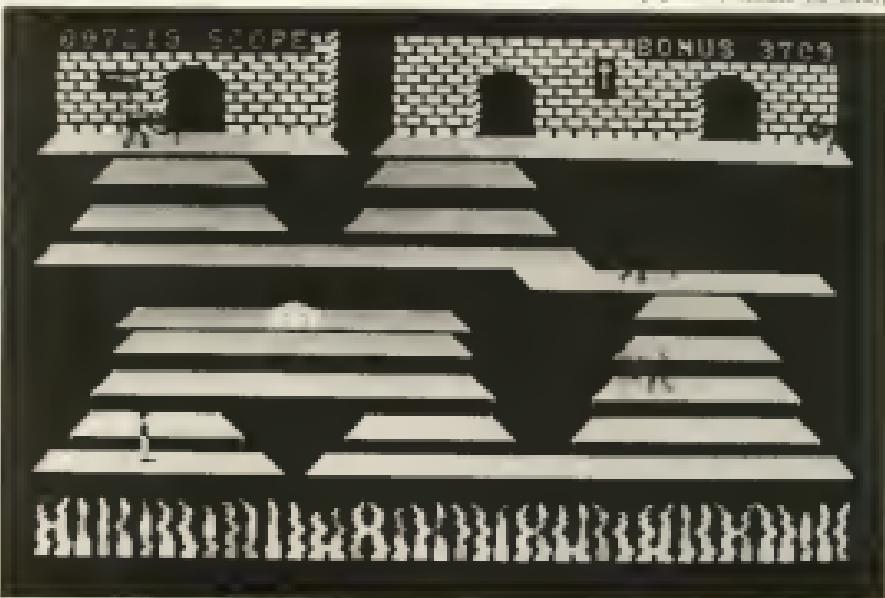
time are you told that you've no money so hit the ski shop and the game ends in a fail.

U.S. Gold is a label that is importing a lot of very good Amiga 500 software, and Beach Head from Access Software is one of these fine efforts. Available on either tape or disk (you had the tape version, unfortunately), it is supposed to be the country by Committee, whatever that the good ones in just it and its superb load format, or just load as they prefer to call it.

You are in charge of a fleet of six ships, whose objective is to reach the shore and

land an attack force to destroy the enemy HQ.

In this multi-stage game, the first has you manoeuvring your fleet (represented by 4 little ships) around a harbour. There are two passages that this harbour, and what is referred to as the hidden passage is the one at 9 o'clock, since this makes the story all the better. However, getting through this passage requires a secret option that is, and with the addition of a charging hull I managed the enemy





Megaton — from the company that brought you *Galaxy*.

• If it's hard on such sites.

The bring you to scene 2, where your ship is under bombardment from enemy aircraft, and your only weapon is an anti-aircraft gun. Some startling graphics here, as your tank moves under a continuous barrage from the enemy. From time to time a reconnaissance plane flies across showing that down towards a friendly base, but usually distance has from the tank in hand and you lose a couple of other ships.

Level 2

The scene seems to continue for ever, and it is a great relief when you finally move onto the next site. Here the enemy ships themselves are flying at you, and moving your gun up and down determines how far your retaliatory shots will travel. A screen cold-out shows you your angle of elevation and how far your last shot was. Once half a dozen degrees is equivalent to 1000 metres travelling distance for your shots, you can soon work out what new angle to fire from.

If you manage an average from this level with a few ships left, each shot magically changes into two rounds and a spot of laser fighting takes place before you reach the safety of the ground and the safety of the game. According to the instructions you never have to shoot the fortresses down on the final level, but this appears to be impossible. I died every time.

A good and challenging game that is well worth considering by any 16 user level of Space Invaders and Adventure games.

Price: £19.99 plus £1.50 p & p. From 86 Tel. 0113 240 0000. Programs has released a double sided tape for the Commodore 64. Our re-

view above this package is that you've paid on the earnest today and how long the programs take to load other manufacturers please note.

Galactic II is a space battle, which takes place over a fixed multi-colour high-resolution background, which one planet and thousands of enemy soldiers in the random hopping around in mid-space. This is presumably done to make the game look visually interesting, rather than the risk of not happens. You control a spaceship, which has the standard look of many others. The enemy obviously only spell out enemy craft at you at a time, and as far as I could tell that was all there was to do in the entire game. Shoot your opponents, one space-ship at a time, and just keep shooting up the points.

Booking, on each level, was a lady breeder, although I don't quite understand exactly what the two systems being used were meant to be used since of two breeders in action they look quite strange when you see them.

The idea in this two player game is just to move your breeder around the map and claim the living daylights out of your opponent. The graphics looks quite ridiculous when both players are throwing punches, and it's almost worth buying just to see them in action.

An intriguing feature of Breeding is that should you in your impatience be forced onto the map, the relevant character is placed immediately back onto their own colour, or start again. Points are scored for the number of numbers showing and the number of aliens that you can force your opponent to kill the map, and the last man

at the end of ten rounds wins.

A badish effort to give value for money, but there are much better programs around.

Mr Megaton is one of those games that is exceedingly addictive, and one that deserves consideration for a place in your own software library. It's by a new company called nano-type.

You are trying to reach the gates of Heaven, in the interesting manner to the game. Unfortunately for you the way to the gates is blocked by demons and humanoids, and the stairways that you must walk up to progress onto further levels on. Mr Megaton, continuously moving the wrong way. Thus, as you return to dodge the demons and keep out of the way of everything else, you forget to carry on moving upwards and the stairs force you back. And the Climbing Stairs of Hell, as the cassette cover lucily describes it.

Heart Invader

You control a nicely animated man, and your job is to move him about the place, walking up the various stairs and avoiding the demons as you go. On each screen there are one or more demons to be punched, and getting hold of these allows you access to the next level of play.

This description may make the program sound a little like *Space Invader* and others of that ilk, but it isn't.

Four speed levels are used along with three different levels of play, to add interest to the game, and all told that is one of the better new releases for the Commodore 64. ■

Making the most of your 64's memory

Relocating the character set and moving the screen can make additional memory available on the 64. David Ballew explores how to create an extra 1K of ram for programming

THIS ARTICLE will show you how to increase the memory of your Commodore 64 to almost 40K of ram, or extra 1024 bytes over the normal.

Commodore 64 Basic starts off with the screen memory ram from locations 1600 to 2047. If we can move this elsewhere then we can take the rest of these positions, and gain an extra 1K.

The main problem under the screen must be moved completely out of the first 4096 of memory. The final spot turns out to be in the unused 4K of ram from 4096 to 5120.

Because of the way the Vic chip works in banks of 16K, we will also have to move the character set so that it falls into the same bank. The attack sprite, too, must fall, and will clash with these later.

I have chosen \$0000 to \$3FFF for the character set with the screen starting after the location \$3000 to \$3FFF.

Changing the font around is a very simple task as only three points are needed. POKE 342074,48 changes the bank that the Vic chip looks at. POKE 32372,12 changes screen and character set positions and POKE 341300 tells the 64 where the screen is for purposes of writing to it. The last point is necessary, otherwise the 64 would think the screen was still at \$3000 while displaying \$1000 to \$3232 which is a very confusing situation.

The character set also has to be relocated, so to make life simple I have

included a short master code program (listing one) which moves the complete character set, changes the screen, and all in the blink of an eyelid!

Once you have typed this in, save it before running it. I have included a "checksum" which will tell you if the DATA statements are wrong. If it works correctly it will say

TYPE NEW CHAR SET JUST TYPE:
\$3000

When you do this \$3000 the screen will be full of garbage. Just clear the screen and all will be OK. You can check that the screen has moved by hitting the 14004E key and getting "A" in the top left corner. Now enter POKE 3300,48 and you will see the "change" in a 8.

Colour memory is not changed, it is still at \$3000. If, however, you do a SLOW-STOP and RESTORE you will see some letters appear on screen. Type in \$3000-\$3232 in -WILL look strange but doesn't stop, press RETURN and all will be as it should be.

Sprites are now stored as to where they are accessed instead of using locations 2048 to 3047. For the sprite pointers, put not 323440 to 323531. The values in these positions go to \$3234 to \$3235 to memory locations 40121 to 40122 in steps of 4. POKE 32318,48 will set the sprite pointers at \$40121-\$40122 = \$2000 for sprite two.

Program two is much longer and contains

the rest of data statements. This contains a brand new character set for the 64. It has its own poking for changing memory around so you don't need to use program one first. Just load and run program two.

This only relocates half of the character set. The reverse characters are obtained by referencing each of the bytes from 128. If you don't want reverse characters then you could use the ones from 2048 to 28199 for extra patterns (functions 41 to 111), but if you do want them then move and run the line of BASIC:

FOR I = 0 TO 16384 STEP 16384 + 1,
128-PEEK(400000+I) NEXT

Program one copies in a full character set with reverse characters. If you don't want reverse, then change the 16 which is the bytes from the end of line 41 until line 80, 81, and after 16048 to line 160 to 16015.

Now type in the extra 1K of memory just under the following line:

POKE 342074,10240 NEXT

The first poke changes character set of RAM to (\$128 = 1024) and the second sets the zero reference just will get 10240 BYTES FREE.

This will free up program as memory so be careful and save it out first.

If you now PRINT PEEK(\$10240 you will get -28420 which really means 30932 bytes free (just add 40931). Now you can have even bigger stuff! ■

Program 1

```

10 B=480
11 FOR D=$10740:READ# POKE A,12:Z=A:NEXT
12 B#C>104030HPRINT#DATA B#B#C>:STOP
13 PRINT#FOR NEW CHAR SET JUST TYPE:
14 PRINT#$3000
15 END
16 DATA129,0,141,207,2,149,208,141,208,2,149,0,141,210,2,149,193,141,211,2,173
17 DATA14,229,81,234,141,14,220,160,1,43,251,137,1,162,0,260,136,138,0,214,187
18 DATA0,200,232,202,247,233,206,2,233,215,2,135,208,235,145,1,9,4,127,1,173
19 DATA14,230,9,1,141,14,200,169,32,141,24,205,169,88,141,0,231,1,9,200,140
20 DATA134,2,96

```


3D COMPUTERS

With more branches
than any other
Computer specialist
you'll never
travel far.

CBS
STOP
SHOPPING
For you!

64

Call at your local
branch for friendly
advice and service



Show a complete display of hardware and software to build up
your home system.

THE HOME COMPUTER SPECIALISTS

Over 5000 in stock
branches

TOLWORTH

330 Tolworth Row South
Tolworth, Surrey
Surrey KT8 5AU
Tel: 01 877 4212

SUTTON

33 Station Road
Sutton, Sutton
Surrey SM2 5EE
Tel: 01 649 3264

EARLSFIELD

111 Greenbury Avenue
Earls Court, London SW5 4RL
Tel: 01 582 5255

BICKENHEADS

Glyncorse Woods
The Queen, Cogges Green,
Bickenheads,
Herts WD3 3AU
Tel: 081 323 77832

NEWBURY

29 Station Road
Newbury
Berks RG14 3PN
Tel: 0344 222347

LUTON

1 Manor Road,
Caddington, Luton
Bedf. LU1 4PT
Tel: 0522 415757

SOFTWARE

All the best sellers from
the top U.K. and U.S.A.
software houses, inc -

LLAMASOFT
DATASOFT
EPYX
INFODOM
RABBIT
INTERCEPTOR
SUPERSOFT
ON-LINE
ANAROS
BRODERBOARD

PERIPHERALS

DISCS
PRINTERS
JOYSTICKS
MONITORS B&W/
COLOUR
LIGHTWEIGHTS
C64 C-SERIES DECKS

A VAST RANGE OF MODEMS,
JOYSTICKS, CARTRIDGES &
JOYSTICK ADAPTERS IN
STOCK

SOPHISTICATED GAMES FOR VIC 20/C64

WHISKEY CRICKET Features some of record cricket tests. Both on and off-field with all statistics and all the major rules of cricket. Includes a comprehensive help facility. £19.95

WHITE HAWK With over 1000 games. £19.95

LEAGUE SOCCER League title game for 2-24 players with 1000 teams. Includes transfer results, transfer fees, player transfers, international teams, etc. £19.95

LEAGUE SOCCER II League title game for 2-24 players with 1000 teams. Includes transfer results, transfer fees, player transfers, international teams, etc. £19.95

WHISKEY BASKET 13 games have performed the tricks of basket ball. Includes free throw shooting, rebounding and shooting. Includes games for 1 to 4 players, with a variety of different game sets.

WHISKEY BASKET II 13 games have performed the tricks of basket ball. Includes free throw shooting, rebounding and shooting. Includes games for 1 to 4 players, with a variety of different game sets.

TOP OF THE POPS Game to have come about the regular television. You can play 1000s of other popular games like Tetris, Top of the Pops, etc. - etc. £19.95

TOP OF THE POPS II Game to have come about the regular television. You can play 1000s of other popular games like Tetris, Top of the Pops, etc. - etc. £19.95

ELECTION NIGHT SPECIAL Based on your party for the next election. You can play 1-2 players. Interactive game. ELECTION NIGHT SPECIAL for VIC 20 - £19.95

ELECTION NIGHT SPECIAL II Super version - £19.95

PARTY II Two games to match the needs of your party. PARTYSOFT ALONE AT THE PACIFIC COAST HOTEL and PARTYSOFT 2. Includes two packed evenings of party fun.

PARTY II for VIC 20 - £19.95 each

£19.95

"REIN" - ADULTS ONLY This game for 2-10 individuals plays. Lots of shooting and hiding, and many other games and effects. You must shoot others to play along, and when you're shot, you must shoot others to get back into the game.

REIN II for VIC 20 - £19.95 each

£19.95

COMEDY DOOM

COMMODORE SOFTWARE FILE

IT HAS BEEN brought to our attention by Melbourne House, as well as by a number of readers, that two programs published in the August issue of *Computer News* are not original. The programs, the Star Game Night File, and the Software File entry Star Copy, are in fact taken from the well-known Melbourne House publication *The Computer-84 Game Book* by Clifford and Mayle Banister. Although we encourage readers to send in programs for the 80 and the VZ for our Software File and Star Game sections, we must stress that programs taken from books and magazines are not acceptable, since the copyright for these programs is owned by the publishers.

Our apologies to Melbourne House and to Clifford and Mark Karschae - obviously we can't keep up with all the books published on the hundreds of computer books and magazines available - but welcome a chance to spot a "copy-of?" (please) or an update. No please consider - original programs only.

Lettersort

Frank Buckley from Shandor Properties
wants the No. 1000.

References



Mastercode Assembler

for the Commodore 64

Full Commodore 64 Assembler/Disassembler



£14.95

Mastercode is a substantial and complex program of use to anyone interested in writing machine code on the Commodore 64. Its features include:

- Machine code monitor
- File Editor
- Disassembler
- Assembler

Mastercode is a full two pass assembler. It accepts labels, variables and equations within assembly language programs. It is possible to store programs anywhere in memory, even in ports occupied by the Assembler. Programs can be saved to either tape or disc.

The Machine Code Monitor includes:

- OUTPUT OF MEMORY TO SCREEN OR TAPE ■ MODIFICATION OF MEMORY ■ EXECUTION OF MACHINE CODE PROGRAMS ■ SAVING OF MACHINE CODE FILES ON TO TAPE OR DISC
- LOADING OF MACHINE CODE FILES FROM TAPE OR DISC ■ STEP BY STEP TRACING OF THE EXECUTION OF A MACHINE CODE PROGRAM INCLUDING DISPLAY OF REGISTER CONTENTS

The Disassembler will translate into assembly language the contents of any area of memory whether the 64's ROM or a user program. Output may be sent either to the screen or a printer.

The File Editor includes:

- ENTRY OF NUMBERED LINES OF ASSEMBLY LANGUAGE INSTRUCTIONS ■ EDITING INDIVIDUALLY OR IN BLOCKS OF PREVIOUSLY ENTERED LINES ■ DELETION INDIVIDUALLY OR IN BLOCKS OF EXISTING LINES ■ RENUMBERING OF EXISTING LINES ■ WRITING OF ASSEMBLY LANGUAGE FILES TO TAPE OR DISC ■ LOADING OF ASSEMBLY LANGUAGE FILES FROM TAPE OR DISC ■ ADDITION OF A BLOCK OF MEMORY SPECIFIED BY THE USER TO THE USER'S ASSEMBLY PROGRAM

The Assembler allows the translation of assembly language programs into machine code with full error checking, labelling and a range of assembly directives.

LOOK OUT FOR THE SUNSHINE RANGE IN
W.H. SMITH'S, BOOTS, JOHN LEWIS,
OTHER LEADING RETAIL CHAINS AND
THROUGH OUR NATIONAL NETWORK OF
BOOK SHOPS AND SPECIALIST STORES

Please send me **Commodore 64 Mastercode Assembler**
price £14.95. Send me the payment order for £_____ made
payable to Sunshine 101-102a Newport Street, London SE19 8JG.
Or telephone your order through Access/Intercom on 01-4271862.

Name _____

Address _____

Signature _____

```

205 PRINT "XXXXXXXXXXXXXXXXXXXXXXXXXXXX", I$TRD$1$88888, 8$888
210 IF I$RHQ4="8THEHGD1U2599"
220 IF I$RHQ5="8THEHGD0U2499"
230 IF I$RHQ1="2THEHGD0U2499"
231 IF I$RH="7THEHGD0U2499"
240 IF I$RHQ1="4THEHGD0U2499"
241 IF I$RH="0THEHGD0U2499"
250 IF I$RHQ2="8THEHGD0U2499"
251 IF I$RH="8THEHGD0U2499"
258 GOTO280
268 PRINT "XXXXXXXXXXXXXXXXXXXXXXXXXXXX"
270 FORX=1TO4
278 PRINT "XXXXXXXXXXXXXXXXXXXXXXXXXXXX"
280 HE=77
288 PRINT "XXXXXXXXXXXXXXXXXXXXXXXXXXXX"
298 PRINT "XXXXXXXXXXXXXXXXXXXXXXXXXXXX"
308 PRINT "XXXXXXXXXXXXXXXXXXXXXXXXXXXX"
318 PRINT "XXXXXXXXXXXXXXXXXXXXXXXXXXXX"
328 FORX=1TO4
338 PRINT "XXXXXXXXXXXXXXXXXXXXXXXXXXXX"
348 HE=77
358 PRINT "XXXXXXXXXXXXXXXXXXXXXXXXXXXX"
368 PRINT "XXXXXXXXXXXXXXXXXXXXXXXXXXXX"
378 FORX=1TO4
388 POKER=42 POKER=42 POKER=42 POKER=42
398 RETURN
408 IF H=44C7761THGRETURN
418 P=PEEK(H=44) POKER,P POKER=H,6 H=H-44
428 POKER,32 TH=TH+1 FORD=L1058 NEXT
438 RETURN
540 I$RH=44C77272THEHRETURN
518 P=PEEK(H=44) POKER,P POKER=H,6 H=H-44
528 POKER,32 TH=TH+1 FORD=L1058 NEXT
538 RETURN
548 IF H=7790THEH618
558 I$RH=781790DHK7527THEH628
568 I$RH=756188DH7791THEH639
578 I$RH=756588DH7791THEH649
588 I$RH=27588THEH790
598 GOTO650
608 I$RH=27783THEH790
618 GOTO650
628 I$RH=237827THEH790
638 GOTO650
648 I$RH=237935THEH790
658 P=PEEK(H=42) POKER,P POKER=H,6 H=H-2
668 POKER,32 TH=TH+1 FORD=L1058 NEXT
678 RETURN
708 I$RH=7720THEH710
718 I$RH=71378DHK7527THEH720
728 I$RH=756188DH7571THEH720
738 I$RH=756588DH7515THEH740
748 GOTO750
758 I$RH=237737THEH790
768 GOTO750
778 I$RH=237817THEH790
788 GOTO750
798 I$RH=237861THEH790
808 GOTO750
818 I$RH=237935THEH790
828 P=PEEK(H=42) POKER,P POKER=H,6 H=H-2
838 POKER,32 TH=TH+1 FORD=L1058 NEXT
848 RETURN
858 TTT=TTT8 DD=8 FORD=TTT4GOT07956STEP2
868 DD=PEEK(H=42)
878 IFCC=420FCC=640FCC=320FCC=102THEH979
888 IFCC=320THEH4="7958 PRINT "WICHART!!!!" GOTO81888
898 IFCC=320THEHPRINT"RT" GOT0280

```



All the Best Courses for the CBM 64

BASIC Adventures in Space

£9.95

BOOK & TAPE COURSE



An exciting course for all children from 7 to 77. Learn BASIC while enjoying the most exciting space adventure. Master the computer to escape from the Alien Planet!

The course contains four computer-coded learning programs to teach the major BASIC commands. Available for the CBM 64, VIC 20 (and BBC, Electron and Spectrum).

Beginners BASIC Course for the CBM 64

£10.50 BOOK & TAPE COURSE

A complete beginner's course for the CBM 64. It assumes no prior knowledge of BASIC and teaches by means of projects. The enclosed software contains a character generator, sprite generator, synthesiser and all six games developed in the text. Included is also Honey AIM! which adds 28 NEW commands to CBM-64 BASIC.

Courses are also available for BBC, C64, ELECTRON, APPLE, DRAGON, SPECTRUM, LYNX.



HONEY GOLD SOFTWARE LTD

Ground Floor
South Plaza
High Street Bexley
London BR5 5BD
Tel. 01 441 4400



Beginners Assembly Language for the CBM 64 or VIC 20

£12.50 BOOK & TAPE COURSE

A complete beginner's course, contains a full two-pass assembler featuring

- Labels
- Macros
- Hexiology
- Memory labels
- LOAD/SAVE
- Input/Output

Also: Binary I/O/Hexadecimal tutor to explain the maths used in machine-code programming. Covers whole 6502/6310 instruction set.

Courses are available from: W H Smiths, BOOTS, SPECTRUM stores and all good computer shops and many bookshops.

```

1020 POKED,287 FORD=1T0159 HEAT
1030 POKED,191 FORD=1T0550 HEAT
1040 POKED,175 FORD=1T01400 HEAT
1050 POKED,0
1060 RETURN
2000 POKED,213 FORD=1T0400 HEAT POKED,1T04
2001 POKED,213 FURG=1T0550 HEAT
2002 PUED,213 FORD=1T0550 HEAT
2003 POKED,225 FORD=1T0550 HEAT
2004 MED-T
2005 FORED,215 FORD=1T0400 HEAT
2007 FORED,0 FTB=1T02000 HEAT RETURN
3000 FCFY=1T04 FORED,225 FOR,-1T05 HEAT FOR ED,0-FDR=1T0550 HEAT
3010 FORED,200 FURG,1T05 HEAT FOR ED,0 FORD=1T0550 HEAT HEAT
3020 RETISH

```

Melody

MELODY is a music program which makes full use of all three of the PC's

radio frequency generator. The main information is contained in the direct statement. Just type the grouping or analysis process.

```

1 GOSUB21
2 REMA=1 THEN POKE36875,8 POK36874,8 POKE36875,0 DOTO24
3 POKE36875,A R=8+1 IFU3THEPOKE36875,R R=0
4 POK36875,T NEXTT=POKE36874,8
5 POKE36875,B U=U+1 IFU3THEPOKE36874,B U=8
6 DOTO1
7 DATA195,195,195,195,195,195,195,207
8 DATA281,195,281,195,281,195,195,183
9 DATA195,195,191,193,287,193,179,183
10 DATA287,287,195,195,281,284
11 DATA281,195,195,281,284,215,281,284
12 DATA195,215,215,289,287,287,287,284
13 DATA287,287,284,287,287,284,287
14 DATA213,287,213,289,281,281,281,199
15 DATA281,281,199,281,289,287,281,287
16 DATA213,215,219,219,281,284,287
17 DATA287,284,287,289,287,281,191,281
18 DATA193,195,195,191,193,284,281,195
19 DATA213,195,281,287,215,195,281,287
20 DATA213,195,287,281,195,-1
21 PRINT"3 HELOBY BY B.THRLOR "
22 PRINT"6 ON ANY COMPUTER "
23 PRINT"8 V1C-28" RETURN
24 PRINT"999 ANOTHER SPIN (Y/N)":POKE196,8
25 GETA1PRA="Y"THENREGISTRE GOTO8
26 IFRA="N"THENSYS64982
27 PRINT"10 PARDON"
28 FOR=1TO288 NEXT REGISTRE PRINTA1 GOTO8

```

Meteors

A program for the 100 sponsored by the
John Andrew Everett of Newcastle.
METRONIDAZOLE was published in our August
issue with some 100 references.

Our apologies to those of you who
couldn't understand why it didn't work.
Here are the missing lines. Send us an
e-mail if you have any questions.

```

730 RETURN
886 PRINT "YOU SCORED",SC FOR36873,27 PRINT "DO YOU WANT ANOTHER GO"
818 INPUT "DO YOU WANT ANOTHER GO?",ANS
828 IFANS<>"Y"THENEND
836 IFANS="Y"THENRUN
846 PRINT "EF FOR36873,27 FOR36873,0 END
1086 FOR36873,0 PRINT"EF"
1085 PRINT "DO YOU WANT ANOTHER GO?",ANS

```

```

1010 PRINT "BAMMER DOOR ATTACK" : B = B : B = B
1020 PRINT "BAMMER A. LOWATT" : B = B : B = B
1030 PRINT "BAMMER APPARITION" : B = B : B = B
1040 PRINT "BAMMERFURY 1984" : B = B : B = B
1050 PRINT "BAMMERFURY 1984"
1060 PRINT "BAMMER" : DO YOU REQUIRE INSTRUCTIONS (Y/N)?" : B = B
1070 GETINFO IFINFO="THEM1070"
1080 IFINFO="Y" THENINFO="THEIRINFO"
1090 IFINFO="N" THENRETURN
1100 PRINT "P"
1110 PRINT "-----INSTRUCTIONS-----"
1120 PRINT "BAMMER (YOU) ARE IN OUTERSPACE AND ARE BEING" : B = B
1130 PRINT "ATTACKED BY METEORS WHICH FLY AT YOU FROM RANDOM POSITIONS." : B = B
1140 PRINT "METEORS TAKE 1 TO KILL THEM BEFORE THEY REACH WHERE YOU STAND. YOU HAVE" : B = B
1150 PRINT "TRY SHOOTING THEM BUT YOU LOSE A LIFE IF" : B = B
1160 PRINT "THEY MANAGE TO PASS YOU. YOUR LIVES DEPEND ON THE SKILL LEVEL YOU" : B = B
1170 PRINT "CHOOSE. 1=1 LIFE 2=GIVES ETC. UP TO 5" : B = B
1180 PRINT "BAMMERPRESS ANY KEY" : B = B
1190 GETINFO IFINFO="THEM1190"
1200 PRINT "BAMMER METEOR ATTACK MODE" : B = B
1205 PRINT "BAMMERCONTROLS... "
1210 PRINT "BAMMERBAMMER-UPDOWNLEFT-DOHHEHEHEH-FIRE" : B = B
1220 PRINT "BAMMERBAMMERPRESS ANY KEY" : B = B
1230 GETINFO IFINFO="THEM1230"
1240 RETURN

```

based on your community progress, including a summary and a printed or plain white paper if possible. Each listing must be accompanied by a hyperactive introduction describing the progress and explaining how it is constructed. We pay \$1.00 for each long-form listing published. We cannot guarantee to return every program submitted, so please keep a copy if you want us to return your listing you must include a stamped addressed envelope. If you have any problem with this program, please write to the appropriate author, Software Plus.

**DUCKWORTH
HOME COMPUTER**

http://www.sciencedirect.com/science/journal/00406034

卷之三

For the next several days, the Committee H. (the local executive of our organization in Madison) held a series of meetings with the members of the committee, and also with a number of citizens residing in the vicinity. The meetings were well-attended.

www.ijerph.org | ISSN: 1660-4601 | DOI: 10.3390/ijerph17030897

卷之三

In response to the question, "What do you think has been the most important development in your field during the last ten years?" 50 percent of the respondents said that the most important development was the introduction of new drugs. Thirty-four percent of the respondents said that the most important development was the introduction of new diagnostic procedures. Thirty percent of the respondents said that the most important development was the introduction of new medical devices. Only 10 percent of the respondents said that the most important development was the introduction of new medical services.

100 200 300 400 500 600 700 800 900 1000



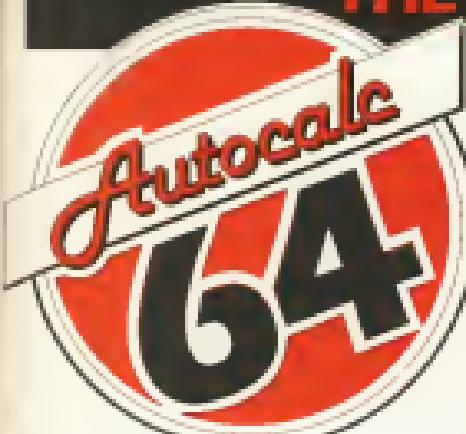
100-101
102-103
104-105

SPONSORS
The Old Rose Factory 42 Ellerdale Crescent, London NW1 3DR
0181 681 3044

08:05

PLAUSIBILITÄT DER ÜBERLIEFERUNG VON DER LÖWENTHEATER-VERTRÄGE, WERTVOLLESTE

THE SPREADSHEET IN A CLASS OF ITS OWN



- Which spreadsheet is suitable for accountants, engineers, scientists and home users?
- Autocalc 64 is ideal for any application involving extensive manipulation of data and formulae from financial planning to market research.
- Which spreadsheet offers an advanced level of formula handling?
- Autocalc 64 copes easily with trigonometrical functions, parentheses and boolean logic, as well as totalling and averaging.
- Which spreadsheet accepts complex conditional statements?
- Autocalc 64 can handle statements as complex as IF a1<4,000 OR a1>8,000 AND a2 = 500 THEN b1=0
- Which spreadsheet offers a flexible screen format?
- Autocalc 64 allows you to select (i) column widths from 3 to 30 characters (ii) the number of rows/columns you need (iii) up to 3,000 cells of information (iv) text or numerical entries lined up to the right or the left, or a combination.
- Which spreadsheet offers a choice of numerical formats?
- Autocalc 64 gives you a choice of (i) integers (ii) floating decimal point (iii) currency (iv) any combination of these.
- Which spreadsheet offers a full replicate facility?
- Autocalc 64 has an advanced replicate function for transferring text, data, formulae or conditional statements from any cell (or block of cells) to any other(s) without monotonous retyping. A go to facility will take the cursor instantly to any cell of your choice — saving time.

**24 HOUR
CREDIT CARD HOTLINE
06286 63531**

**CBM64 ONLY
TAPE £14.95**

**CBM64 ONLY
DISK £19.95**

- Which spreadsheet is easy to use yet advanced in operation?
- Autocalc 64 is designed to guide you — helpful error reports diagnose input or formulae errors. A full demonstration program and comprehensive instructions are included.
- Which spreadsheet is compatible with standard Commodore printers?
- Autocalc 64 gives you a printout facility using any of these printers: Commodore 1616, 1920, MPS 801, 1520, MC3 801, DPS 1101, Selkirk GP 100WC.
- Which spreadsheet is 100% machine code for fast efficient responses, and offers a choice of saving to disk (using 1941 drive) or to tape using a C24 unit?
- Autocalc 64 — as if you didn't know!
- Which spreadsheet sells at a realistic budget price?
- Autocalc 64 costs just £14.95 on tape, £19.95 on disk inclusive of VAT and P&P.
- Where do I get one?
- Ring us now on 06286 63531 (24 hours) to place your ACCESS or VISA card order, or complete the order form and send it to us today! (Prompt delivery guaranteed). Autocalc 64 is available only direct from Richard Shepherd Software.

Please send me:

Autocalc 64 CBM £14.95
Autocalc 64 TAPE £14.95

Overseas orders add £1.50 P&P
Enclose Cash/Cheque/P.O. payable to Richard Shepherd Software Ltd. Or please quote my ACCESS/VISA card No. _____

Signature: _____

NAME: _____ ADDRESS: _____

Richard Shepherd Software, the Richard Shepherd logo and Autocalc are registered trademarks of Richard Shepherd Software Ltd. © 1986 Richard Shepherd Software Ltd. All rights reserved. Printed in Great Britain.

RICHARD SHEPHERD SOFTWARE

ELM HOUSE, 23-25 ELMSHOTT LANE, OXFORDSHIRE, SL10 8RS, U.K. TEL: (08286) 63531

Working Vic

Book, Putting Your Vic 20 To Work
Author: Tom Lee
Publisher: Prentice-Hall
Cost: £12.95
Reviewer: David Stephenson

This book is well laid out and well printed. The 10 programs are taken from a VIC-10 listing and use a code of character codes rather than the normal codes, which makes the programs easier to type in. All the programs should fit onto the unexpanded VIC and, as there is not one BASIC or FORTRAN throughout the book, they would also transfer straight into the C64.

The best parts of this book are not the programs themselves, which are generally short and elementary, but the two introductory pages of explanations. The book starts with an introduction on how to use the book, then follows with a chapter on algorithms. In this chapter there's also

four parts are incorporated, not in binary format as page 2 (VICP 1 = 1), but as questions and answer tables.

In chapter 3, Portfolio-Coding crops up, not as used in Assembly language, but as

variables who have created the user's manual and written to go with it later further. All the programs can be improved by putting more use any sound, colour or character colour.

Beginner's Basic

Book, Commodore 64 — Vic 20 Basic
Author: Richard Marshall & Thomas Winkler
Publisher: Prentice-Hall
Cost: £12.95
Reviewer: Gordon Davies

Practical Basic publication **Commodore 64 — VIC 20** is a complete plodding beginner's book that aims gradually to anything beyond the VIC-10 past and point level. It looks very much as though it was originally a sample for introductory programming courses in US high schools and junior colleges, hence the emphasis on predicting plotting, graphical patterns, graphs, and the like and forget.

In principal however, it shows the author's intent fairly



well to explain the program code. Each of the following chapters consists of a program, a list of variables used, a brief key term explanation, some 'furtherreading' then what they mean, the vocabulary of statements etc used, and finally a few questions for you to do.

This book is aimed at

switched on the idea that the most interesting things you can do with a micro are developing standard use of the graphical characters. So, before every chapter each fundamental of the VIC-10 is covered, they have you drawing diamonds and meandering snakes all over the screen, and it is not long before you start producing little men on the screen writing your name in three-dimensional characters across just over sixteen screens. Which is all very well, of course, but when about the split?

Then, alas, is where the authors let you down, and for a very strange reason. Since nearly all the algorithms are intended for use on both the VIC-10 and the Commodore 64, there is very little specifically a sample of applications, as found in any finance package or only one of the two books. What this means is that Commodore 64 users have to explain their machine to the full set of basic to find they have been reduced to more of the £12.95 they had to shell out for this batch.



How well do you know Commodore?

A complete set of *Sensational Commodore* books to be won. Simply answer the following questions and complete the Breaker in 10 words or less.

1. What does CBM stand for?
2. Which company has recently been taken over by Commodore founder Jack Tramiel?
3. Who wrote Falcon Patrol for the Commodore 64?
4. What does EED stand for?
5. Libraries are a necessary feature in Jeff Minter's game *The Metagalactic Library Bands At The Edge Of Time* — but where did Libraries first commercially appear?
6. What well known Commodore employee has associations with the Battle of Wesseling?
7. Who is Commodore's new president?
8. What does VIC 1 and F0?
9. Which company has Commodore's ex-marketing manager John Baker recently joined?
10. Commodore is moving from its UK base in Stevenage. Where to?

The Breaker

1. Firstly you should make sure you've



How well do you know Commodore?

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.

Added by request: name.....

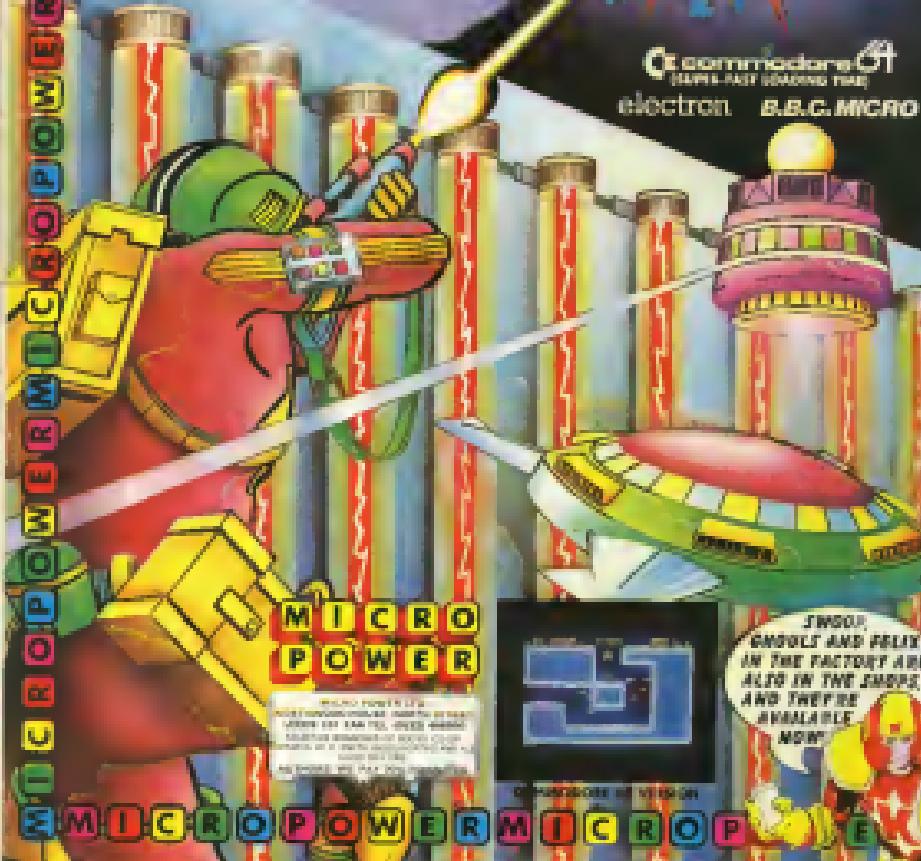
Complete the coupon and complete the ten Breakers in 10 words or less and post it to:
Commodore Headquarters, 12-13 Earls Court, Newgate Street, London WC2B 3LD

CYBERTRON MISSION

Join Cybertron, the most well-protected stronghold in the galaxy. Challenge the Spinners, Gliders and Cyberdroids as you explore the 3D maze complexions of the planet's riches. Avoid reaching the walls with their dazzling high voltage charge and watch out for the relentless guards who gobble through walls in hot pursuit. EA-91 (pectrum and 320 pixels version 47.95)



commodore 64
(super fast loading time)
electron B.B.C. MICRO



MICRO
POWER

MICRO POWER is a trademark of Micro Power Ltd.
MICRO POWER LTD. is a registered company in Great Britain.
MICRO POWER LTD. is a registered company in Great Britain.



SINGER,
CLODS AND FRUIT
IN THE FACTORY ARE
ALSO IN THE SHOP,
AND THEREFORE
AVAILABLE
NOW!

Printed

CHI-SOFT

The Welsh Wizards of Adventure

**THE QUILL
ADVENTURE WRITER
FOR THE
SPECTRUM 16K
AND
COMMODORE 64**

AMERICAN CLASSICS **104-105**
CONTEMPORARY ARTISTS **106-107**
CLASSICAL MUSIC **108-109**

**SELECTED TITLES IN AVAILABLE FROM
W. B. SAUNDERS, NEW YORK, JOHN WILEY, AND BY
COURT-COMPAGNIE BOEKEN VLAANDEREN**

Or Direct Room Or
By Post or Telephone

ANSWER

20 Hawthorn Road
Barry
South Gloucestershire
Avon BS36 7JW

Credit Card Order Line 24 hour service 10:00-22:00 41361 ext 430



MICRO COMPUTER AUCTIONS

REGULAR MONTHLY AUCTIONS FOR
ALL MICRO HARD AND SOFTWARE.
SEND NOW FOR ENTRY FORM OR
NEXT
CATALOGUE.

TO:
Micro Computer Auctions (CH1)
Northington House
59 Grey's Inn Road
London WC1X 8TL
Tel: 01-242 0012 (24 hours)

DISPLAY AD INDEX

ARE YOU OFFERING A COMMODORE PRODUCT OR SERVICE?

Offer it where it'll be seen — 240 days this space for one month and put your business in front of thousands of proven Commodity enthusiasts and trade contacts nationwide.

Find the COMMERCIAL HORIZONS Ad Rate

ANSWER

You could also earn extra credit

CAN YOU BEAT OUR GREAT GAMES

We've got the biggest (and best) selection of games for the Commodore 64. We think they're unbeatable



MORE THAN GAMES . . .

Our FREE catalogue lists dozens of programs for your Commodore 64 to help you run your business, write programs, or just enjoy yourself. We've been producing top quality software since 1978. So if you want the best, just remember our name . . .

SUPERSOFT

SUPERSOFT, 100 Chelmsford Road, Chelmsford, Essex, CM1 3PL,
Harrow, Middlesex, HA1 7SE Telephone (01-461 1960)

ANSWER

BACK

Spinning reels

P.W. What's the program in BASIC to represent a four cylinder? The programs uses BBC graphics for my different cylinders, and the BBC1 has class to pick one of cylinders. The program uses C64, but in the second 'stage' of the 'reels' the motor in the cassette stops, although it had stopped after loading. The only way to stop it seems to be RUN...STOP.

Although I doesn't affect the operation of the program in any way, I'd appreciate it if you could tell me how to stop this happening.

P. Denz
London
Co. Durham

THE REASONS must be that you are POKING values to a mapped location, and one of these locations is the one which enables the cassette motor. Use S of location 6 and I control the motor, e.g. POKE 6,0 to turn motor on, POKE 6,9 to turn motor off.

Simons suggestion

I HAVE recently bought a 3120 printer, cassette tape and disk drive. Everything works apart from the Sensors that come from the Sensors Disk Joystick command's CLIP8 and HESD8FT.

It appears that these commands are set up for devices 1, but the power is there so can you tell me how to change the device number. I would prefer a hardware rather than a software solution.

Lastly, some programs will not load with Sensors Disk plugged in — why is that?

P. J. Ward
Sheffield
UK

DISPLACEMENT values to change the BBC1 device number is given on page 4 of the manual at £6 — *Microuser* section. The reason why some programs

will not load is that they attempt to use the same memory area as Sensors Disk. The only way around this is to change the memory location of your machine code programs. If they are reconnected programs this would be pretty difficult!

Sequential files

I OWN A 48 with a disk drive, but after hours of thought I have come to a dead end. I find it impossible to write a sequential file program that will produce a file, then read it up at any time so you can add to it later. It is, as I have had to do. Please can you supply a solution?

Michael Whittaker
Aberdeen
Scotland

If YOU WANT to change data in a file without recording the entire file, then you will have to use Relative Access files, in which you can access any part of the file without having to read in and process all of the preceding data.

You can find useful information in Appendix 1: *Commodore Homebrew*, or in a book called *Advanced Commodore 64 Disk and Tape* by Alan and Carolyn Astell, published by Elmwood. There are two books by the title, so make sure you get the right one.

Curse the cursor

I OWN A 48 and find the floating cursor a bit annoying. Is it possible, with the use of a small program, to replace the cursor with a horizontal single line marker?

J. Gately

Northfield

Scotland

THE FLICKERING cursor is not a character, but an area showing from normal to reverse of the memory location where you are.

From CTRL and SHIFT CNP down the space bar, and you'll create a reverse bar across the screen. Place the cursor on that line and you'll see a floating blue cursor. In

program mode you won't have any problem, since the cursor is normally off and you can program any character you want to replace it. In direct mode you will have to stored the CHARGET routine in case of your case, which will put the character you require in the cursor location.

ROM routine such as RESSET and the machine will then ignore that routine.

There is a free public domain machine code monitor called Micromon which is available to all CPC users.

Time delay

I CANNOT find the way to produce a time delay of exactly one second on the 48. Can you help?

Christopher Astell

Clevedon

ST64 will just timing as follows:

10 PRINT "CLEAR THE :
:SCREEN"
10 PRINT "HOME": TI
:20000:20

You will see that TI32 corresponds to home, ST64 to screen, and you can also easily fit TI32 in the correct time of day (see the 48 user check) by using other direct mode commands. TI32 is and will be ST64, unlike other machines.

David Steele, TI32 = "HOME": TI64 = "HOME": TI64:20000:20

Program ends, no loops allowed — all print remain at the right moment.

Code and colours

IS IT possible to stop all machine code programs from appearing?

It is possible to set colours or change luminance levels on the 48.

Commodore

Doctor

MACHINE CODE programs which normally usually do so for reasons of copyright protection, as it would not be appropriate for us to give advice on this question.

The new C64 and Plus-4 have controllable luminance levels, though not colour sets.

If you need help with a technical query or problem, write to:

Jack Cohen,
Commodore Marlowe
12-13 Little Newport
Street London
WC2R 2BD

CLASSIFIED

FOR SALE

TOODLERST! PLAY WITH YOUR PARENT'S CHILDREN ANIMATED MUSICAL FLASHCARD AND SPELLING PROGRAM, DEVELOPED IN CONJUNCTION WITH SCHOOL AND EDUCATIONAL PSYCHOLOGIST SUITABLE 3-7 YEARS. CASSETTE £4.99 DISC £7 FROM TOODLERST, 1 CATALYST COTTAGE, ENFIELD, DX00 0X8 0903.

CRM 94 Software to assist with the use of a CRM system. Written by Alan R. Smith, Alan R. Smith, 109 Highgate Woods, London NW4, Telephone London 01 580 2000 or Phone Alan 081 580 2000 after 5pm per unit inc postage.

TELE POLY MAIL SYSTEM C-10

Telephone House 01 960 2100
Artist Challenge 01 960 2100
Sony 01 960 2100
Cassette & Photo 01 960 2100
Pentax 01 960 2100
Sony Head 01 960 2100
Sony Print 01 960 2100
Royal Orchestra Box 01 960 2100
Parliament 01 960 2100
ALDO Services 0180 7400000
Sheer N' Sassy 01 960 2100
Philips 01 960 2100
London Higher House
of Justice 01 960 2100
Tele 01 960 2100 for Tel 01 960 2100
01 960 2100
Electron & Sound Inc (Please send
remittance)
Postcode Institute 01 960 2100
Chorus 01 960 2100

DATA WORLD 01 960 2100
Postal Address 01 960 2100
ROCKFALL, LONDON NW1 1PT

FOR SALE The Hobbit and Ring
Postal Address 01 960 2100
Tel 01 960 2100

A 10 page utility program which will convert 1000 decimal to binary numbers to 1000 binary to decimal. Also does scientific & decimal conversion. It also does hex conversion. You can type in the code and receive it back. Comes with 1000 words of help and 1000 words of comments. Not written instructions. For a free 100 word trial version, or for more information, call 01 960 2100 or write: Commodore PC Software Dept, 11 Clark Road, Southgate, Enfield, Middlesex, EN3 2LZ, or fax 01 960 2100.

**COMMODORE 64 AND
PC SOFTWARE**
SWARS AND BURGESS LTD.
109 CHATSWORTH ROAD,
WILMSLOW,
MANCHESTER, CH1 4PL.
TELEPHONE 0161 426 2222.
TELEFAX 0161 426 2222.

**MINIMUM OF 1000 WORDS
PRINTED** 01 960 2100

FOR SALE

MICRO COMPUTER AUCTIONS

REGULAR MONTHLY AUCTIONS FOR
ALL MICRO HARD AND SOFTWARE

SEND NOW FOR ENTRY FORM OR

NEXT

CATALOGUE.

TO:

Micro Computer Auctions (CH1)

Northington House

59 Grey's Inn Road

London WC1X 8TL

Tel: 01-242 0012 (24 Hours)

COMMODORE 64 2100 00 0100
Software 0100 00000000000000000000
Links to cassette and other
various software books. Tel 0100
0000 0000.

COMMODORE 64 2100 00 0100
Software 0100 00000000000000000000
Links to cassette and other
various software books. Tel 0100
0000 0000.

DATA WORLD 01 960 2100
Postal Address 01 960 2100
ROCKFALL, LONDON NW1 1PT

APPLICATION

JANITOR The cleaning services
offices. For your business
environment. 01 960 2100
with care in Registration process
Based in West Bromwich.

LUCAS FILM Every CD-ROM 01 960 2100
If you want to understand life and
universe? Lucas Film - Home
Entertainment Company. Tel 0100
0000 0000. Tel 0100 0000 0000.

Here's my FREE Classified Ad.

(PRIVATE ADVERTISERS ONLY)

PLEASE WRITE YOUR COPY IN CAPITAL LETTERS ON THE LINES BELOW

NAME

ADDRESS

TELEPHONE

Please cut out and send the form to:

CLASSIFIED DEPARTMENT
COMMODORE HORIZONS
12-13 LITTLE NEWPORT STREET,
LONDON WC2R 3LO

Save £2.50

Discount Club

Save £2.50

The Commodore Horizons Discount Club is designed to save you money. Simply cut out the coupon at the bottom of the page and send it, together with a cheque or postal order, to:

Commodore Horizons
Discount Club
12-13 Little Newport Street
London WC2R 3LD

This month's special offer, which is only open to Commodore Horizons readers, features five programs for the Commodore 64 from Supersoft.

Free Zoom Monitor

Mikro Assembler

This plug-in cartridge will enable you to write assembly source code as easily as Basic. Written by Andrew Trott, it contains a full cross editor, a dump/pas assembler and can be used with tape or disk. A free Zoom machine code monitor (worth £11.95) is included in the package.

Used price:

£27.95

Discount Club price:

£19.95

(+ free Zoom monitor)

Watch

Watch is a monitor, debugger, disassembler, full screen graphics, assembly language editor, code editor, decompiler, symbol table, memory viewer, stack viewer, file editor, file manager, and waveform viewer. You can edit up to 16 columns, with types 1 to 13, comments and end positions of 1000 bytes. It has 16 levels of zoom, 10 to 1000x1000, and the disassembly can be viewed in either assembly or code. Watch gives:

- 16 levels of zoom
- 1000x1000 resolution
- 16 columns
- 13 comment types
- 1000 byte end position
- 16 levels of assembly

Watch price: £11.95
 Discount Club price: £11.95



Interdictor Pilot

The space flight simulator to end all space flight simulators. Written by Lawrence Marshall (Commodore Horizons), the program puts you in charge of an Interdictor Mk III combat assault craft. Your mission is to capture and destroy ships of the Jaded Coalition alliance. Extremely complex and comprehensive. Used price: £17.95; Discount Club price: £13.95.

Music Master

If you have ever wanted to use your 64 as an electronic music synthesizer, this is the program for you. Developed over three and a half years, the masters will be telling what any combination of voices can be played simultaneously. A Background Master feature contains 14 programmed rhythms and patterns. Stereo Master, written by Nick Hyatt, also enables you to create a variety of special effects including reverb and phasing.

Used price:

£27.95

Discount Club price:

£19.95

Graphics designer

Written entirely in machine code, this program contains a demonstration file complete with a simple character set and spacer. In multi-colour mode the number of available colours is doubled, but the number of dots per square is halved. Write to from both cartesian and polar. Used price: £29.95; Discount Club price: £21.95.

Get code 12 for disk.

Name:
 Address:

*If you require a disk, please state type of disk drive.

Cut out and post to:
 Commodore Horizons, Discount Club
 12-13 Little Newport Street,
 London WC2R 3LD.
 Please allow 28 days for delivery.

Commodore Horizons Discount Club

Software	Price	Tape	Disk*	Cartridge
Mikro Assembler + free Zoom Monitor	£37.95		<input type="checkbox"/>	
Basic:	£13.95	£17.95	<input type="checkbox"/>	
Music Master:	£13.95	£17.95	<input type="checkbox"/>	
Interdictor Pilot	£13.95	£17.95	<input type="checkbox"/>	
Graphics Designer	£21.95	£29.95	<input type="checkbox"/>	
Total:			<input checked="" type="checkbox"/>	To be specified required

Save £1.50

Now your Commodore 64 is a robot or a synth

It's processing words ,
painting pictures  & doing
maths  in machine code .

It's teaching you ,
taking you on an adventure
 & using its brains  ...All
because you've read a book.



Sunshine books make your Commodore mean more.

Start building your library today.

Join the adventure as we travel coast-to-coast by road, river and sea.

Please review the book's subject matter

■ [Learn more about personal branding](#)

四

Page 1

100

Please note we have changed the way we calculate our energy prices and now include a fixed charge.

For more information about the study, contact Dr. Michael J. Hwang at (319) 356-4000 or email at mhwang@uiowa.edu.

These actions will help to prevent further damage to the environment.

100 200 300 400 500 600 700 800 900

ANSWER The answer is 1000.

THE CONNOISSEUR'S CHOICE



www.industrydocuments.ucsf.edu

REVIEW - **Book Reviews**

Highly functional and sustainable software

Global Communications - Asia Pacific

ANSWER

[View more reviews from Facebook](#)



Historical Context

[Financial
Statement](#)

[View Details](#) | [Edit](#) | [Delete](#)

<http://www.elsevier.com/locate/jmp>

ANSWER *Because the two numbers have different signs, subtract the smaller number from the larger number and keep the sign of the larger number.*

DEPARTAMENTO

THE BOSTONIAN - The Bostonian is a monthly magazine published by the Bostonian Society.

What's Next?

REFERENCES

REFERENCES

ANSWER *James or John, son of Zebedee, one of Jesus' twelve apostles.*

ANSWER **ANSWER** **ANSWER**

The most common laboratory measurement of coronary artery disease is the serum concentration of C-reactive protein.

Draw the line and win Quicksilva software

Solve the puzzle and you could be one of twenty lucky winners of Commodore 64 games from Quicksilva.

Tony Balkans sets the problem — solve it and you could win!

THE MELL MOTT Many Commodore fans have been writing again:

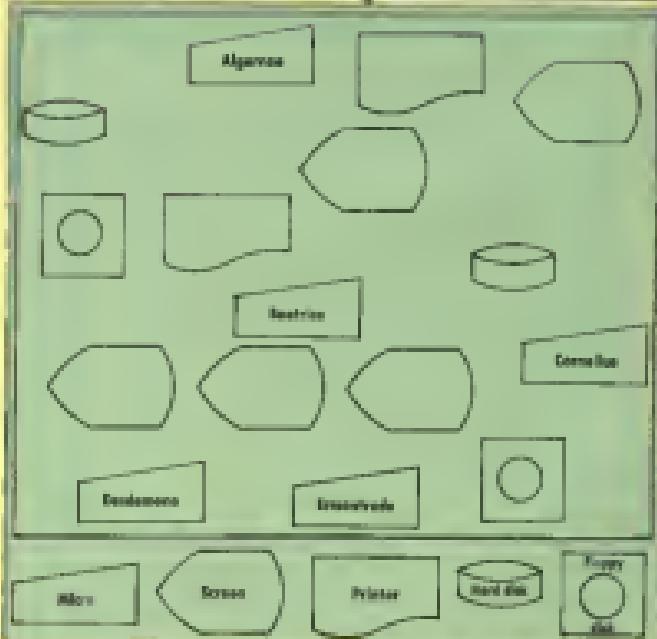
"They're not all up there important in the office hours, but as no member will have anything to do with any of the others, they've drawn them straight line on the floor of the main room, and each member has kept his or her name and perhaps much one of the boxes marked off by the lines. No two people share an appy."

This diagram shows the locations of the various bits of equipment in the room. The name of the owner of each piece is shown — but which one has THREE peripherals? They each have at least one, a mystery.

Find the answer and you could be one of twenty winners sharing £200 in prizes from Quicksilva Software. The prizes include copies of the 40 issues of the best-selling Z80 Am Am Am.

When you've solved the problem, enclose the following in an envelope in an addressed, self-addressed envelope in these words or terms, "I want to play Quicksilva games because..." and send your entry to 10th Little Newport Street, London, WC2E 1HP. In order not later than the last working day of September. Winners will be announced in the November issue.

The four winners of our July competition will each receive a full set of software from Richard Simpson. They are Peter Baker of Solihull, I.P. Campey of Bradford, Andy Bradshaw from Chester, and Andrew Staines of Luton.



"When I got it home, it was nothing like the picture on the box."



"It couldn't have been Activision."

How often have you taken a new piece of software home to find it just didn't live up to the blurb on its box.

Wild, crazy pictures, promises, promises... And the game play itself is one big let down.

Well, those days are over.

Activision software is something else. What really sets it apart is the way you go on running it.

It stays on top of the charts months after others drop right out.

See the first titles in your usual Commodore software store now.

BEAMRIDER • DECATHLON • HERO • PITFALL • TOY BIZARRE • ZENII

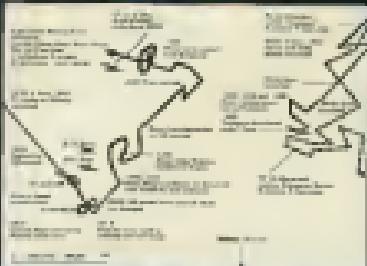
Activision
Computers were made for us.

WARGAMERS SERIES

BATTLE FOR MIDWAY



**Available on Cassette £9.95
Disk Version £12.95**



100 L'ESPRESSO

10 of 10

THE AUTHOR
Mike Ward is one of the original UK designers and has been playing and developing computer games since the early days.



**NEW RELEASE
AVAILABLE
NOW**